

# FICHA DE DADOS DE SEGURANÇA

(de acordo com o Regulamento (UE) 2020/878)



**0010S1-Alka Minus**

Versão 1 Data de emissão: 30/10/2023

Versão 2 (substitui a versão 1)

Data de revisão: 07/02/2025

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## SECÇÃO 1: IDENTIFICAÇÃO DA SUBSTÂNCIA/MISTURA E DA SOCIEDADE/EMPRESA.

### 1.1 Identificador do produto.

Nome do produto: Alka Minus  
Código do produto: 0010S1  
Nome Químico: hidrogenossulfato de sódio  
N. Índice: 016-046-00-X  
N. CAS: 7681-38-1  
N. CE: 231-665-7  
N. registo: 01-2119552465-36-XXXX

### 1.2 Utilizações identificadas relevantes da substância ou mistura e utilizações desaconselhadas.

Redutor de Alcalinidade

#### Usos não aconselhados:

Usos diferentes aos aconselhados.

Os cenários de exposição que cobrem usos podem ser encontrados no anexo.

### 1.3 Identificação do fornecedor da ficha de dados de segurança.

#### Identificação da empresa:

Empresa: **FLUIDRA COMERCIAL PORTUGAL**  
Endereço: Rua Alfredo Silva nº41  
População: 2786-656 São Domingos de Rana  
Distrito: PORTUGAL  
Telefone: Tef. +351 214 444 720  
Fax: +34 93 713 41 11  
E-mail: fds@inquide.com  
Web: www.ctxprofessional.com

#### Responsável pela colocação no mercado:

Empresa: **FLUIDRA COMERCIAL ESPAÑA**  
Endereço: Av. Alcalde Barnils, 69  
População: 08174 Sant Cugat del Vallès  
Distrito: Barcelona - Spain  
Telefone: telf: 902 42 32 22  
Web: www.ctxprofessional.com

### 1.4 Número de telefone de emergência: (Disponível 24h)

Em caso de intoxicação contactar o Centro de Informação Antivenenos (CIAV) (+351) 800 250 250.

Atendimento médico 24 horas por dia, 7 dias por semana.

## SECÇÃO 2: IDENTIFICAÇÃO DOS PERIGOS.

### 2.1 Classificação da substância ou mistura.

Segundo o Regulamento (EU) No 1272/2008:

Eye Dam. 1 : Provoca lesões oculares graves.

### 2.2 Elementos do rótulo.

#### Rótulo de acordo com o Regulamento (EU) No 1272/2008:

Pictogramas:

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Palavras-sinal:

**Perigo**

Advertências de perigo:

H318 Provoca lesões oculares graves.

Recomendações de prudência:

P101 Se for necessário consultar um médico, mostre-lhe a embalagem ou o rótulo.

P102 Manter fora do alcance das crianças.

P280 Use luvas de protecção e máscara.

P305+P351+P338 SE ENTRAR EM CONTACTO COM OS OLHOS: Enxaguar cuidadosamente com água durante vários minutos. Se usar lentes de contacto, retire-as, se tal lhe for possível. Continue a enxaguar.

P301+P310 EM CASO DE INGESTÃO: contacte imediatamente um CENTRO DE INFORMAÇÃO ANTIVENENOS ou um médico.

P501 Eliminar o conteúdo e/ou o recipiente de acordo com a legislação em vigor quanto ao tratamento de resíduos.

Contém:

hidrogenossulfato de sódio

### 2.3 Outros perigos.

A substância não é PBT

A substância não é mPmB

A substância não tem propriedades desreguladoras do sistema endócrino.

Em condições de uso normal e na sua forma original, o produto não tem efeitos negativos sobre a saúde e o meio ambiente.

## SECÇÃO 3: COMPOSIÇÃO/INFORMAÇÃO SOBRE OS COMPONENTES.

### 3.1 Substâncias.

| Identificadores                                                  | Nome                       | Concentração | (*)Classificação -Regulamento 1272/ 2008 |                                                                      |
|------------------------------------------------------------------|----------------------------|--------------|------------------------------------------|----------------------------------------------------------------------|
|                                                                  |                            |              | Classificação                            | Limite de concentração específico e a Estimativa da Toxicidade Aguda |
| N. Índice: 016-046-00-X<br>N. CAS: 7681-38-1<br>N. CE: 231-665-7 | hidrogenossulfato de sódio | 3 - 100 %    | Eye Dam. 1,<br>H318                      | -                                                                    |

### 3.2 Misturas.

Não Aplicável.

## SECÇÃO 4: MEDIDAS DE PRIMEIROS SOCORROS.

### 4.1 Descrição das medidas de emergência.

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Nos casos de dúvida, ou quando persistirem os sintomas de mal-estar, solicitar atenção médica. Não administrar nunca nada por via oral a pessoas que se encontrem inconscientes.

### **Inalação.**

Situar o acidentado ao ar livre, mantê-lo quente e em repouso, se a respiração for irregular ou se detiver, praticar respiração artificial.

### **Contacto com os olhos.**

Lavar abundantemente os olhos com água limpa e fresca durante, pelo menos, 10 minutos, puxando para cima das pálpebras e procurar assistência médica. Não permita que a pessoa se esfregue o olho afetado.

### **Contacto com a pele.**

Tirar a roupa contaminada. Lavar a pele vigorosamente com água e sabão ou um limpador de pele adequado. NUNCA utilizar dissolventes ou diluentes.

### **Ingestão.**

Se acidentalmente foi ingerido, procurar imediatamente atenção médica. Mantê-lo em repouso. NUNCA provocar o vômito.

### **4.2 Sintomas e efeitos mais importantes, tanto agudos como retardados.**

Producto Corrosivo: o contacto com os olhos ou com a pele pode provocar queimaduras, a ingestão ou inalação podem provocar danos internos; caso tal aconteça, será necessária assistência médica imediata.

O contato com os olhos pode produzir danos irreversíveis.

### **4.3 Indicações sobre cuidados médicos urgentes e tratamentos especiais necessários.**

Solicite ajuda médica de imediato. Não administrar nunca nada por via oral a pessoas que se encontrem inconscientes. Não induzir o vômito. Se a pessoa vomitar, isole as vias respiratórias. Cubra a zona afetada com um compressa estéril seca. Proteja a zona afetada de pressão ou fricção.

## SECÇÃO 5: MEDIDAS DE COMBATE A INCÊNDIOS.

O produto NÃO está classificado como inflamável; em caso de incêndio devem-se seguir as medidas expostas em seguida:

### **5.1 Meios de extinção.**

#### **Meios de extinção adequados:**

Pó extintor ou CO2. Em caso de incêndios mais graves também espuma resistente ao álcool e água pulverizada.

#### **Meios de extinção inadequados:**

Não usar para a extinção jato direto de água. Em presença de tensão elétrica não é aceitável utilizar água ou espuma como meio de extinção.

### **5.2 Perigos especiais decorrentes da substância ou mistura.**

#### **Riscos especiais.**

A exposição aos produtos de combustão ou decomposição pode ser prejudicial para a saúde.

### **5.3 Recomendações para o pessoal de combate a incêndios.**

Refrigerar com água os tanques, cisternas ou recipientes próximos à fonte de calor ou fogo. Ter em conta a direção do vento. Evitar que os produtos utilizados na luta contra incêndio passem a esgotos, sumidouros ou cursos de água.

### **Equipamento de proteção contra incêndios.**

Segundo a magnitude do incêndio, pode ser necessário o uso de roupas de proteção contra o calor, equipamento respiratório autónomo, luvas, óculos protetores ou máscaras faciais e botas.

## SECÇÃO 6: MEDIDAS EM CASO DE FUGA ACIDENTAL.

### **6.1 Precauções individuais, equipamento de proteção e procedimentos de emergência.**

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Para controlo de exposição e medidas de proteção individual, ver secção 8.

### 6.2 Precauções a nível ambiental.

Produto não classificado como perigoso para o meio ambiente; na medida do possível, evite qualquer derrame.

### 6.3 Métodos e materiais de confinamento e limpeza.

Conter e recolher o derrame com material absorvente inerte (terra, areia, vermiculita, terra de diatomáceas...) e limpe a área imediatamente com um descontaminante adequado.

Deposite os resíduos em recipientes fechados e adequados para a eliminação, de acordo com os regulamentos locais e nacionais (ver secção 13).

### 6.4 Remissão para outras secções.

Para controlo de exposição e medidas de proteção individual, ver secção 8.

Para a posterior eliminação dos resíduos, seguir as recomendações da secção 13.

## SECÇÃO 7: MANUSEAMENTO E ARMAZENAGEM.

### 7.1 Precauções para um manuseamento seguro.

Para a proteção pessoal, ver secção 8.

Na zona de aplicação deve ser proibido fumar, comer e beber.

Cumprir com a legislação sobre segurança e higiene no trabalho.

Não utilizar nunca pressão para esvaziar os recipientes, não são recipientes resistentes à pressão. Conservar o produto em recipientes de um material idêntico ao original.

### 7.2 Condições de armazenagem segura, incluindo eventuais incompatibilidades.

Armazenar segundo a legislação local. Observar as indicações da etiqueta. Armazenar os recipientes entre 5 e 25 °C, num local seco e bem ventilado, longe de fontes de calor e da luz solar directa. Manter longe de pontos de ignição. Manter longe de agentes oxidantes e de materiais fortemente ácidos ou alcalinos. Não fumar. Evitar a entrada a pessoas não autorizadas. Depois de ter aberto os recipientes, estes devem ser fechados de novo com cuidado, e colocados verticalmente para evitar derrames.

O produto não está afetado pela Directiva 2012/18/UE (SEVESO III).

### 7.3 Utilizações finais específicas.

Nenhum em particular.

## SECÇÃO 8: CONTROLO DA EXPOSIÇÃO/PROTEÇÃO INDIVIDUAL.

### 8.1 Parâmetros de controlo.

O produto NÃO contém substâncias com Valores Limite Ambientais de Exposição Profissional. O produto NÃO contém substâncias com Valores Biológicos Limite.

### 8.2 Controlo da exposição.

#### Medidas de ordem técnica:

Prover uma ventilação adequada, o qual pode ser conseguido mediante uma boa extração -ventilação local e um bom sistema geral de extração.

|                                                                                                                    |                         |
|--------------------------------------------------------------------------------------------------------------------|-------------------------|
| Concentração:                                                                                                      | 100 %                   |
| Usos:                                                                                                              | Redutor de Alcalinidade |
| Proteção respiratória:                                                                                             |                         |
| Se as medidas técnicas recomendadas forem cumpridas, não é necessário qualquer equipamento de proteção individual. |                         |
| Proteção das mãos:                                                                                                 |                         |
| Se o produto for manuseado corretamente, não é necessário qualquer equipamento de proteção individual.             |                         |

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### Proteção dos olhos:

Se o produto for manuseado corretamente, não é necessário qualquer equipamento de proteção individual.

### Proteção da pele:

|                  |                                                                                                                                                                                    |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EPI:             | Calçado de trabalho                                                                                                                                                                |
| Características: | Marcação «CE» Categoria II.                                                                                                                                                        |
| Normas CEN:      | EN ISO 13287, EN 20347                                                                                                                                                             |
| Manutenção:      | Estes artigos adaptam-se à forma do pé do primeiro utilizador. Por este motivo, e igualmente por questões de higiene, deve-se evitar a sua reutilização por qualquer outra pessoa. |
| Observações:     | O calçado de trabalho para uso profissional é o que incorpora elementos de protecção destinados à protecção do utilizador contra as lesões que possam provocar acidentes           |

## SECÇÃO 9: PROPRIEDADES FÍSICO-QUÍMICAS.

### 9.1 Informações sobre propriedades físicas e químicas de base.

Estado físico: Sólido

Cor: Branco / amarelo

Odor: Inodoro

Limiar de odor: Não aplicável/Não disponível devido à natureza/propriedades do produto

Ponto de fusão: 180 °C

Ponto de congelação: Não aplicável/Não disponível devido à natureza/propriedades do produto

Ponto de ebulição ou ponto de ebulição inicial e intervalo de ebulição: >200 °C

Inflamabilidade: Não aplicável/Não disponível devido à natureza/propriedades do produto

Limite inferior de explosividade: Não aplicável/Não disponível devido à natureza/propriedades do produto

Limite superior de explosividade: Não aplicável/Não disponível devido à natureza/propriedades do produto

Ponto de inflamação: Não aplicável/Não disponível devido à natureza/propriedades do produto

Temperatura de autoignição: Não aplicável/Não disponível devido à natureza/propriedades do produto

Temperatura de decomposição: Não aplicável/Não disponível devido à natureza/propriedades do produto

pH: 1 - 1,2 (20%)

Viscosidade cinemática: Não aplicável/Não disponível devido à natureza/propriedades do produto

Solubilidade: Não aplicável/Não disponível devido à natureza/propriedades do produto

Hidrosolubilidade: 1080 g/l (20 °C)

Lipossolubilidade: Não aplicável/Não disponível devido à natureza/propriedades do produto

Coefficiente de partição n-octanol/água (valor logarítmico): Não aplicável/Não disponível devido à natureza/propriedades do produto

Pressão de vapor: Não aplicável/Não disponível devido à natureza/propriedades do produto

Densidade absoluta: Não aplicável/Não disponível devido à natureza/propriedades do produto

Densidade relativa: 1.4 - 1.45

Densidade relativa do vapor: Não aplicável/Não disponível devido à natureza/propriedades do produto

Características das partículas: Não aplicável/Não disponível devido à natureza/propriedades do produto

### 9.2 Outras informações.

Viscosidade: Não aplicável/Não disponível devido à natureza/propriedades do produto

Propriedades explosivas: Não aplicável/Não disponível devido à natureza/propriedades do produto

Propriedades comburentes: No

Ponto de gota: Não aplicável/Não disponível devido à natureza/propriedades do produto

Cintilação: Não aplicável/Não disponível devido à natureza/propriedades do produto

## SECÇÃO 10: ESTABILIDADE E REATIVIDADE.

### 10.1 Reatividade.

O produto não apresentar riscos devido à sua reatividade.

### 10.2 Estabilidade química.

Instável em contato com:

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- Bases.

### 10.3 Possibilidade de reações perigosas.

Pode produzir-se uma neutralização em contato com bases.

### 10.4 Condições a evitar.

- Evitar o contato com bases.

### 10.5 Materiais incompatíveis.

Evitar os seguintes materiais:

- Bases.

### 10.6 Produtos de decomposição perigosos.

Dependendo das condições de uso, podem ser gerados os seguintes produtos:

- Vapores ou gases corrosivos.

## SECÇÃO 11: INFORMAÇÃO TOXICOLÓGICA.

### 11.1 Informações sobre as classes de perigo, tal como definidas no Regulamento (CE) nº 1272/2008.

As salpicaduras nos olhos podem causar irritação e danos reversíveis.

#### Informação Toxicológica.

| Nome                                                                 | Toxicidade aguda |        |         |                 |
|----------------------------------------------------------------------|------------------|--------|---------|-----------------|
|                                                                      | Tipo             | Ensaio | Espécie | Valor           |
| hidrogenossulfato de sódio<br><br>N. CAS: 7681-38-1 N. CE: 231-665-7 | Oral             | LD50   | Rat     | 2140 mg/kg      |
|                                                                      | Cutânea          |        |         |                 |
|                                                                      | Inalação         | LD50   | Rat     | >2.4 mg/l (4 h) |

a) Toxicidade aguda;

Dados não inclusivos para a classificação.

b) Corrosão/irritação cutânea;

Dados não inclusivos para a classificação.

c) Lesões oculares graves/irritação ocular;

Produto classificado:

Lesões oculares graves, Categoria 1: Provoca lesões oculares graves.

d) Sensibilização respiratória ou cutânea;

Dados não inclusivos para a classificação.

e) Mutagenicidade em células germinativas;

Dados não inclusivos para a classificação.

f) Carcinogenicidade;

Dados não inclusivos para a classificação.

g) Toxicidade reprodutiva;

Dados não inclusivos para a classificação.

h) Toxicidade para órgãos-alvo específicos (STOT) - exposição única;

Dados não inclusivos para a classificação.

i) Toxicidade para órgãos-alvo específicos (STOT) - exposição repetida;

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Dados não inclusivos para a classificação.

j) Perigo de aspiração.

Dados não inclusivos para a classificação.

## 11.2 Informações sobre outros perigos.

### **Propriedades desreguladoras do sistema endócrino**

Este produto não contém componentes com propriedades desreguladoras do sistema endócrino com efeitos sobre a saúde humana.

### **Outras informações**

Não existem informações disponíveis sobre outros efeitos adversos para a saúde.

## SECÇÃO 12: INFORMAÇÃO ECOLÓGICA.

### 12.1 Toxicidade.

| Nome                       | Ecotoxicidade           |        |         |                   |
|----------------------------|-------------------------|--------|---------|-------------------|
|                            | Tipo                    | Ensaio | Espécie | Valor             |
| hidrogenossulfato de sódio | Peixes                  | LC50   | Fish    | 7960 mg/l (96h)   |
|                            | Invertebrados aquáticos | LC50   | Daphnia | 1766 mg/l (48 h)  |
|                            | Plantas aquáticas       | LC50   | Algae   | 1900 mg/l (120 h) |

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### 12.2 Persistência e degradabilidade.

Não se dispõe de informação relativa à biodegradabilidade.

Não se dispõe de informação relativa à degradabilidade.

Não há informação disponível sobre a persistência e degradabilidade do produto

### 12.3 Potencial de bioacumulação.

Não estão disponíveis informações relativas à Bioacumulação.

### 12.4 Mobilidade no solo.

Não há informação disponível sobre a mobilidade no solo.

Não é permitido o vertido em sumidouros ou cursos de água.

Evitar a penetração no solo.

### 12.5 Resultados da avaliação PBT e mPmB.

Não há informações disponíveis sobre a avaliação PBT e mPmB do produto.

### 12.6 Propriedades desreguladoras do sistema endócrino.

Este produto não contém componentes com propriedades desreguladoras do sistema endócrino sobre o ambiente.

### 12.7 Outros efeitos adversos.

Não há informação sobre outros efeitos adversos para o meio ambiente.

## SECÇÃO 13: CONSIDERAÇÕES RELATIVAS À ELIMINAÇÃO.

### 13.1 Métodos de tratamento de resíduos.

Não é permitido o vertido em sumidouros ou cursos de água. Os resíduos e recipientes vazios devem ser manipulados e eliminados de acordo com as legislações locais/nacionais vigentes.

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Siga as disposições da Directiva 2008/98/CE relativas à gestão de resíduos, DL 73/2011 e Decisão da Comissão 2014/955 / UE (códigos LER).

## SECÇÃO 14: INFORMAÇÕES RELATIVAS AO TRANSPORTE.

Não é perigoso no transporte. Em caso de acidente e derrame do produto, actuar de acordo com o ponto 6.

### 14.1 Número ONU ou número de ID.

Não é perigoso no transporte.

### 14.2 Designação oficial de transporte da ONU.

Descrição:

ADR/RID: Não é perigoso no transporte.

IMDG: Não é perigoso no transporte.

OACI/IATA: Não é perigoso no transporte.

### 14.3 Classes de perigo para efeitos de transporte.

Não é perigoso no transporte.

### 14.4 Grupo de embalagem.

Não é perigoso no transporte.

### 14.5 Perigos para o ambiente.

Não é perigoso no transporte.

Transporte por barco, FEm - Fichas de emergência (F – Incêndio, S - Derrames): Não Aplicável.

### 14.6 Precauções especiais para o utilizador.

Não é perigoso no transporte.

### 14.7 Transporte marítimo a granel em conformidade com os instrumentos da OMI.

Não é perigoso no transporte.

## SECÇÃO 15: INFORMAÇÃO SOBRE REGULAMENTAÇÃO.

### 15.1 Regulamentação/legislação específica para a substância ou mistura em matéria de saúde, segurança e ambiente.

O produto não é afetado pelo Regulamento (CE) nº 1005/2009 do Parlamento Europeu e do Conselho, de 16 de Setembro de 2009, relativo às substâncias que empobrecem a camada de ozono.

#### Composto orgânico volátil (COV)

Teor de COV (p/p): 0 %

Teor de COV: 0 g/l

Classificação do produto de acordo com o Anexo I da Directiva 2012/18/UE (SEVESO III): N/A

O produto está afetado pelo DL 147/2008, de 29 de julho (responsabilidade por danos ambientais).

O produto não está afetado pelo Regulamento (UE) No 528/2012 relativo à comercialização e ao uso dos biocidas.

O produto não está afetado pelo procedimento estabelecido no Regulamento (UE) No 649/2012, relativo à exportação e importação de produtos químicos perigosos.

Classe de contaminante para a água (Alemanha): WGK 1: Pouco perigoso para a água. (Autoclassificado conforme Regulamento AwSV)

### 15.2 Avaliação da segurança química.

Não foi realizado uma avaliação da segurança química do produto.

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Dispõe-se de Cenário de Exposição do produto.

### SECÇÃO 16: OUTRAS INFORMAÇÕES.

Códigos de classificação:

Eye Dam. 1 : Lesões oculares graves, Categoria 1

#### **Classificação e procedimento utilizado para determinar a classificação das misturas em conformidade com o Regulamento (CE) n.º 1272/2008 [CRE]:**

|                         |                             |
|-------------------------|-----------------------------|
| Perigos físicos         | Com base em dados de ensaio |
| Perigos para a saúde    | Método de cálculo           |
| Perigos para o ambiente | Método de cálculo           |

Aconselha-se que seja dada formação básica relativamente à segurança e higiene laboral para que seja efectuado um manuseamento correcto do produto.

Dispõe-se de Cenário de Exposição do produto.

Abreviaturas e siglas utilizadas:

|       |                                                                                     |
|-------|-------------------------------------------------------------------------------------|
| AwSV: | Regulamento de Instalações para a manipulação de substâncias perigosas para a água. |
| CEN:  | Comité Europeu de Normalização.                                                     |
| EC50: | Concentração média eficaz.                                                          |
| EPI:  | Equipamento de proteção individual.                                                 |
| LC50: | Concentração letal, 50%.                                                            |
| LD50: | Dose Letal, 50%.                                                                    |
| WGK:  | Classes de perigo para a água.                                                      |

Principais referências bibliográficas e fontes de dados:

<http://eur-lex.europa.eu/homepage.html>

<http://echa.europa.eu/>

Regulamento (UE) 2020/878.

Regulamento (CE) No 1907/2006.

Regulamento (UE) No 1272/2008.

A informação facilitada nesta ficha de Dados de Segurança foi redigida de acordo com o REGULAMENTO (UE) 2020/878 DA COMISSÃO de 18 de junho de 2020 que altera o Anexo II do Regulamento (CE) n.º 1907/2006 do Parlamento Europeu e do Conselho relativo ao registo, avaliação, substâncias e misturas químicas (REACH).

A informação desta Ficha de Dados de Segurança do produto está baseada nos conhecimentos actuais e nas leis vigentes da CE e nacionais, quanto a que as condições de trabalho dos utilizadores estiverem fora do nosso conhecimento e controlo. O produto não deve ser utilizado para fins distintos àqueles que são especificados, sem ter primeiro uma instrução por escrito, da sua utilização. É sempre responsabilidade do utilizador tomar as medidas oportunas com a finalidade de cumprir com as exigências estabelecidas nas legislações.

**Table 1:** Overview on exposure scenarios and coverage of substance life cycle

| ES number | Exposure scenario title                                                                        | Volume (tonnes)                      | Manufacture | Identified uses |         |              | Resulting life cycle stage  |             | Linked to Identified Use | Sector of use category (SU)                                      | Chemical product category (PC)     | Process category (PROC)                                         | Article category (AC) | Environmental release category (ERC) |
|-----------|------------------------------------------------------------------------------------------------|--------------------------------------|-------------|-----------------|---------|--------------|-----------------------------|-------------|--------------------------|------------------------------------------------------------------|------------------------------------|-----------------------------------------------------------------|-----------------------|--------------------------------------|
|           |                                                                                                |                                      |             | Formulation     | End use | Consumer use | Service life (for articles) | Waste stage |                          |                                                                  |                                    |                                                                 |                       |                                      |
| 9.1       | Manufacture and use of sodium hydrogensulfate as such or in preparation in industrial settings | not relevant for exposure assessment | X           | X               | X       |              |                             |             | 1, 2, 3, 4, 5, 6, 7      | 2a, 2b, 3, 4, 5, 6b, 7, 8, 9, 10, 11, 13, 15, 16, 17, 19, 20, 23 | 14, 15, 19, 20, 21, 25, 35, 36, 37 | 1, 2, 3, 4, 5, 7, 8a, 8b, 9, 10, 12, 13, 14, 15, 17, 19, 21, 24 |                       | 1 – 7, 12                            |
| 9.2       | Use of sodium hydrogensulfate as such or in preparation in professional settings               | not relevant for exposure assessment |             |                 | X       |              |                             |             | 8, 9                     | 22                                                               | 14, 15, 20, 35, 37                 | 2, 3, 4, 5, 8a, 8b, 9, 10, 11, 12, 13, 14, 15, 17, 19, 21, 24   |                       | 8 – 11                               |
| 9.3       | Consumer use of cleaning products containing sodium hydrogensulfate                            | not relevant for exposure assessment |             |                 |         | X            |                             |             | 10                       | 21                                                               | 35                                 |                                                                 |                       | 8                                    |

# Exposure scenario addendum for sodium hydrogensulfate

| ES number | Exposure scenario title                                                   | Volume (tonnes)                      | Manufacture | Identified uses |         |              | Resulting life cycle stage  |             | Linked to Identified Use | Sector of use category (SU) | Chemical product category (PC) | Process category (PROC) | Article category (AC) | Environmental release category (ERC) |
|-----------|---------------------------------------------------------------------------|--------------------------------------|-------------|-----------------|---------|--------------|-----------------------------|-------------|--------------------------|-----------------------------|--------------------------------|-------------------------|-----------------------|--------------------------------------|
|           |                                                                           |                                      |             | Formulation     | End use | Consumer use | Service life (for articles) | Waste stage |                          |                             |                                |                         |                       |                                      |
| 9.4       | Consumer use of sodium hydrogensulfate as pH-regulator for swimming pools | not relevant for exposure assessment |             |                 |         | X            |                             |             | 11                       | 21                          | 20, 37                         |                         |                       | 8                                    |

## 9.1 Manufacture and use of sodium hydrogensulfate as such or in preparation in industrial settings

| Exposure Scenario Format (1) addressing uses carried out by workers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                          |                               |                      |                           |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|----------------------|---------------------------|
| <b>1. Title</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                          |                               |                      |                           |
| <b>Free short title</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Manufacture and use of sodium hydrogensulfate as such or in preparation in industrial settings                                                                                                                                                                                                                           |                               |                      |                           |
| <b>Systematic title based on use descriptor</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | SU2a, SU2b, SU3, SU4, SU5, SU6b, SU7, SU8, SU9, SU10, SU11, SU13, SU15, SU16, SU17, SU19, SU20, SU23<br>PC1PC14, PC15, PC19, PC20, PC21, PC25, PC35, PC36, PC37<br>PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14, PROC15, PROC17, PROC19, PROC21, PROC24<br>ERC1-7, 12 |                               |                      |                           |
| <b>Processes, tasks and/or activities covered</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Processes, tasks and/or activities covered are described in Section 2 below.                                                                                                                                                                                                                                             |                               |                      |                           |
| <b>Assessment Method</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Occupational exposure: A qualitative assessment of inhalation and dermal exposure was conducted in the absence of any DNELs (derived no-effect levels) for inhalation and dermal exposure.<br>Environmental exposure: A qualitative assessment was conducted.                                                            |                               |                      |                           |
| <b>2. Operational conditions and risk management measures</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                          |                               |                      |                           |
| <b>2.1 Control of workers exposure</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                          |                               |                      |                           |
| <b>Product characteristic</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                          |                               |                      |                           |
| <p>Sodium hydrogensulfate is produced and placed on the market as a pearled/granular product or in preparations having the same physical form. The rotating drum method (RDM) according to Heubach was used to determine the particle size distribution of the airborne fraction of dust generated during mechanical agitation simulating workplace conditions. This method provides a "total dustiness" value indicating the propensity of a material to become airborne, and thus serving as an indicator of the emission potential of the material under workplace conditions. The test resulted in a total dustiness of sodium hydrogensulfate of 0.8 % when simulating mechanical agitation (e.g. bagging, filling and mixing operations). According to the MEASE approach, the substance intrinsic emission potential could be assessed as very low – low.</p> <p>Thus, inhalation exposure to sodium hydrogensulfate is assumed to be negligible during all process steps in industrial and/or professional settings and the inhalation route is not a relevant exposure route for this substance. Under the prerequisite that all available (i.e. purchasable) forms of sodium hydrogensulfate are in accordance with the dustiness as documented above, human health is thereby considered to be sufficiently protected.</p> <p>It is noted that the substance intrinsic emission potential may be overwritten for specific processes by the process intrinsic emission potential. PROC 7 and PROC 11 as being spray applications in industrial and non-industrial settings, respectively, are assumed to result in a higher emission potential (it is also assumed that the physical form has to be modified to powder prior to spraying). Since PROC 21 and PROC 24 are considered as potential abrasive tasks, the emission potential is accordingly higher and the physical form is assumed to be wear dust during these tasks.</p> |                                                                                                                                                                                                                                                                                                                          |                               |                      |                           |
| <b>PROC</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>Use in preparation</b>                                                                                                                                                                                                                                                                                                | <b>Content in preparation</b> | <b>Physical form</b> | <b>Emission potential</b> |
| <b>PROC 7</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | not restricted                                                                                                                                                                                                                                                                                                           |                               | powder               | medium                    |
| <b>PROC 21, 24</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                          |                               | (wear) dust          | low – high                |
| <b>All other applicable PROCs</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                          |                               | pearls, granules     | very low – low            |
| <b>Amounts used</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                          |                               |                      |                           |
| The actual tonnage handled per shift is not considered to influence the exposure as such for this scenario. Instead, the combination of the scale of operation (industrial vs. professional) and level of containment/automation (as reflected in the PROC) is the main determinant of the process intrinsic emission potential.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                          |                               |                      |                           |
| <b>Frequency and duration of use/exposure</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                          |                               |                      |                           |
| <b>PROC</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>Duration of exposure</b>                                                                                                                                                                                                                                                                                              |                               |                      |                           |
| <b>PROC 7</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Due to the high level of automation and measures at the process level (please see below), inhalation exposure is negligible and the exposure duration is consequently short (< 60 minutes).                                                                                                                              |                               |                      |                           |
| <b>All other applicable PROCs</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | not restricted                                                                                                                                                                                                                                                                                                           |                               |                      |                           |
| <b>Human factors not influenced by risk management</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                          |                               |                      |                           |
| The shift breathing volume during all process steps reflected in the PROCs is assumed to be 10 m³/shift (8 hours).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                          |                               |                      |                           |
| <b>Other given operational conditions affecting workers exposure</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                          |                               |                      |                           |
| Other operational conditions such as room volume, indoor or outdoor use, process temperature and process pressure are not considered relevant for the occupational exposure assessment of the conducted processes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                          |                               |                      |                           |

| Technical conditions and measures at process level (source) to prevent release                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                       |                                                                                                                                            |                                                                                                                                                                                                                                                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PROC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Level of containment                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                       | Level of segregation                                                                                                                       |                                                                                                                                                                                                                                                                                                                       |
| PROC 1, 2, 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | closed process                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                       | not required                                                                                                                               |                                                                                                                                                                                                                                                                                                                       |
| PROC 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | closed process                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                       | spraying of sodium hydrogensulfate in a segregated spray tower where direct exposure of the worker is excluded                             |                                                                                                                                                                                                                                                                                                                       |
| All other applicable PROCs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Risk management measures at the process level (e.g. containment or segregation of the emission source) are generally not required in these processes since any potential inhalation exposure is assumed to be negligible due to the low dusty nature of sodium hydrogensulfate.                                                                      |                                                                                                                                                       |                                                                                                                                            |                                                                                                                                                                                                                                                                                                                       |
| Technical conditions and measures to control dispersion from source towards the worker                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                       |                                                                                                                                            |                                                                                                                                                                                                                                                                                                                       |
| PROC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Level of separation                                                                                                                                                                                                                                                                                                                                  | Localised controls (LC)                                                                                                                               | Efficiency of LC (according to MEASE)                                                                                                      | Further information                                                                                                                                                                                                                                                                                                   |
| PROC 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Any potentially required separation of workers from the emission source is indicated above under "Frequency and duration of exposure". A reduction of exposure duration can be achieved, for example, by the installation of ventilated (positive pressure) control rooms or by removing the worker from workplaces involved with relevant exposure. | Efficient ventilation of the area (e.g. local exhaust ventilation) is recommended to minimise any potential emission of wear dust into workplace air. | 78 %                                                                                                                                       | -                                                                                                                                                                                                                                                                                                                     |
| All other applicable PROCs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Separation of workers from the emission source is generally not required in the conducted processes.                                                                                                                                                                                                                                                 |                                                                                                                                                       |                                                                                                                                            |                                                                                                                                                                                                                                                                                                                       |
| Organisational measures to prevent /limit releases, dispersion and exposure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                       |                                                                                                                                            |                                                                                                                                                                                                                                                                                                                       |
| Avoid inhalation or ingestion. General occupational hygiene measures are required to ensure safe handling of the substance. Good occupational hygiene practices have to be followed (e.g. shower and change clothes at end of work shift) to avoid any contamination of private households via the work-home-interface. Do not eat and smoke in the workplace. Unless otherwise stated below, wear standard working clothes and shoes. Do not wear contaminated clothing at home. Do not blow dust off with compressed air. Regular training in workplace hygiene practice and proper use of personal protective equipment is required.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                       |                                                                                                                                            |                                                                                                                                                                                                                                                                                                                       |
| Conditions and measures related to personal protection, hygiene and health evaluation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                       |                                                                                                                                            |                                                                                                                                                                                                                                                                                                                       |
| PROC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Specification of respiratory protective equipment (RPE)                                                                                                                                                                                                                                                                                              | RPE efficiency (assigned protection factor, APF)                                                                                                      | Specification of gloves                                                                                                                    | Further personal protective equipment (PPE)                                                                                                                                                                                                                                                                           |
| All applicable PROCs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | If ventilation is insufficient and/or formation of relevant dust levels cannot be excluded, use RPE according to EN143 and EN149.<br>An FFP2 mask should be worn for safety reasons when packaging/unpacking sodium hydrogensulfate since high abrasion may occur.                                                                                   | (APF=10, for safety reasons during processes where relevant dust levels and high abrasion may occur)                                                  | In cases where extensive direct contact with sodium hydrogensulfate cannot be avoided, wear suitable protective gloves according to EN374. | Eye protection equipment (e.g. goggles or visors) conforming to EN166 must be worn, unless potential contact with the eye can be excluded by the nature and type of application (i.e. closed process).<br>Additionally, face protection, protective clothing and safety shoes are required to be worn as appropriate. |
| Any RPE as defined above shall only be worn if the following principles are implemented in parallel: The duration of work (compare with "duration of exposure" above) should reflect the additional physiological stress for the worker due to the breathing resistance and mass of the RPE itself, due to the increased thermal stress by enclosing the head. In addition, it shall be considered that the worker's capability of using tools and of communicating are reduced during the wearing of RPE.<br>For reasons as given above, the worker should therefore be (i) healthy (especially in view of medical problems that may affect the use of RPE), (ii) have suitable facial characteristics reducing leakages between face and mask (in view of scars and facial hair). The recommended devices above which rely on a tight face seal will not provide the required protection unless they fit the contours of the face properly and securely.<br>The employer and self-employed persons have legal responsibilities for the maintenance and issue of respiratory protective devices and the management of their correct use in the workplace. Therefore, they should define and document a suitable policy for a respiratory protective device programme including training of the workers.<br>An overview of the APFs of different RPE (according to BS EN 529:2005) can be found in the glossary of MEASE. |                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                       |                                                                                                                                            |                                                                                                                                                                                                                                                                                                                       |

| 2.2 Control of environmental exposure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                             |                                    |                                                                                                                                                                                                                                                         |                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| Amounts used                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                             |                                    |                                                                                                                                                                                                                                                         |                                |
| The daily and annual amount per site (for point sources) is not considered to be the main determinant for environmental exposure.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                             |                                    |                                                                                                                                                                                                                                                         |                                |
| Frequency and duration of use                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                             |                                    |                                                                                                                                                                                                                                                         |                                |
| Intermittent (< 12 time per year) or continuous use/release                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                             |                                    |                                                                                                                                                                                                                                                         |                                |
| Environment factors not influenced by risk management                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                             |                                    |                                                                                                                                                                                                                                                         |                                |
| Flow rate of receiving surface water: 18000 m3/day                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                             |                                    |                                                                                                                                                                                                                                                         |                                |
| Other given operational conditions affecting environmental exposure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                             |                                    |                                                                                                                                                                                                                                                         |                                |
| Effluent discharge rate: 2000 m3/day                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                             |                                    |                                                                                                                                                                                                                                                         |                                |
| Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                             |                                    |                                                                                                                                                                                                                                                         |                                |
| Risk management measures related to the environment aim to avoid discharging NaHSO <sub>4</sub> solutions into municipal wastewater or to surface water, in case such discharges are expected to cause significant pH changes regular control of the pH value during introduction into open waters is required. In general discharges should be carried out such that pH changes in receiving surface waters are minimised (e.g. through neutralisation). In general most aquatic organisms can tolerate pH values in the range of 6-9. This is also reflected in the description of standard OECD tests with aquatic organisms. Neutralisation of waste waters and effluent should be widespread (often it is also required by national legislation). |                                                                                                                                                                                                                                             |                                    |                                                                                                                                                                                                                                                         |                                |
| Conditions and measures related to waste                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                             |                                    |                                                                                                                                                                                                                                                         |                                |
| Solid industrial waste of NaHSO <sub>4</sub> should be reused or discharged to the industrial wastewater and further neutralized if needed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                             |                                    |                                                                                                                                                                                                                                                         |                                |
| 3. Exposure estimation and reference to its source                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                             |                                    |                                                                                                                                                                                                                                                         |                                |
| Occupational exposure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                             |                                    |                                                                                                                                                                                                                                                         |                                |
| PROC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Method used for inhalation exposure assessment (refer to introduction)                                                                                                                                                                      | Inhalation exposure estimate (RCR) | Method used for dermal exposure assessment                                                                                                                                                                                                              | Dermal exposure estimate (RCR) |
| All applicable PROCs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Since sodium hydrogensulfate has a low dustiness (<1 % as obtained in rotating drum testing), inhalation exposure during all process steps is assumed to be negligible if the proposed risk management measures as described above are met. |                                    | Due to the negligible dermal absorption of sodium hydrogensulfate, the dermal route is not a relevant exposure path for sodium hydrogensulfate and a dermal DNEL has not been derived. Thus, dermal exposure is not assessed in this exposure scenario. |                                |

| Environmental emissions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The environmental exposure assessment is only relevant for the aquatic environment, when applicable including STPs/WWTPs, as emissions of NaHSO <sub>4</sub> in the different life-cycle stages (production and use) mainly apply to (waste) water. The aquatic effect and risk assessment only deal with the effect on organisms/ecosystems due to possible pH changes related to H <sup>+</sup> discharges, being the toxicity of Na <sup>+</sup> and SO <sub>4</sub> <sup>2-</sup> are expected to be negligible compared to the (potential) pH effect. Only the local scale is addressed, including municipal sewage treatment plants (STPs) or industrial waste water treatment plants (WWTPs) when applicable, both for production and industrial use as any effects that might occur would be expected to take place on a local scale. The high water solubility and very low vapour pressure indicate that NaHSO <sub>4</sub> will be found predominantly in water. Significant emissions or exposure to air are not expected due to the low vapour pressure of NaHSO <sub>4</sub> . Significant emissions or exposure to the terrestrial environment are not expected either for this exposure scenario. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Environmental emissions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | The production or use of NaHSO <sub>4</sub> can potentially result in an aquatic emission and locally increase the NaHSO <sub>4</sub> concentration and affect the pH in the aquatic environment. When the pH is not neutralised, the discharge of effluent from NaHSO <sub>4</sub> production or use sites may impact the pH in the receiving water. The pH of effluents is normally measured very frequently and can be neutralised easily as often required by national laws.                                                                                                                                    |
| Exposure concentration in waste water treatment plant (WWTP)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Waste water from NaHSO <sub>4</sub> production or use is an inorganic wastewater stream and therefore there is no biological treatment. Therefore, wastewater streams from NaHSO <sub>4</sub> production sites will normally not be treated in biological waste water treatment plants (WWTPs).                                                                                                                                                                                                                                                                                                                     |
| Exposure concentration in aquatic pelagic compartment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | When NaHSO <sub>4</sub> is emitted to surface water, sorption to particulate matter and sediment will be negligible. When NaHSO <sub>4</sub> is rejected to surface water, the pH may decrease, depending on the buffer capacity of the water. The higher the buffer capacity of the water, the lower the effect on pH will be. In general the buffer capacity preventing shifts in acidity or alkalinity in natural waters is regulated by the equilibrium between carbon dioxide (CO <sub>2</sub> ), the bicarbonate ion (HCO <sub>3</sub> <sup>-</sup> ) and the carbonate ion (CO <sub>3</sub> <sup>2-</sup> ). |
| Exposure concentration in sediments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | The sediment compartment is not included in this ES, because it is not considered relevant for NaHSO <sub>4</sub> : when NaHSO <sub>4</sub> is emitted to the aquatic compartment, sorption of to sediment particles is negligible.                                                                                                                                                                                                                                                                                                                                                                                 |
| Exposure concentrations in soil and groundwater                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | The terrestrial compartment is not included in this exposure scenario, because it is not considered to be relevant.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Exposure concentration in atmospheric compartment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | The air compartment is not included in this CSA because it is considered not relevant for NaHSO <sub>4</sub> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Exposure concentration relevant for the food chain (secondary poisoning)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Bioaccumulation in organisms is not relevant for NaHSO <sub>4</sub> : a risk assessment for secondary poisoning is therefore not required.                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Occupational exposure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| The DU works inside the boundaries set by the ES if he handles sodium hydrogensulfate having the same properties with regard to dustiness as described in this ES and if the proposed risk management measures as described above are met. A dustiness assessment can be made either on a qualitative or on a quantitative basis. For a qualitative assessment the MEASE glossary ( <a href="http://www.ebrc.de/mease.html">www.ebrc.de/mease.html</a> ) can be consulted, which provides guidance on this topic. A quantitative assessment can be done by conducting a dustiness test with the specific material according to the rotating drum method. It is however noted that also other dustiness tests exist, which may be used instead. For further details please refer to the European Standard EN 15051 titled "Workplace atmospheres – Measurement of the dustiness of bulk materials – Requirements and reference test methods".                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

**Environmental emissions**

If a site does not comply with the conditions stipulated in the safe use ES, it is recommended to apply a tiered approach to perform a more site-specific assessment. For that assessment, the following tiered approach is recommended.

**Tier 1:** retrieve information on effluent pH and the contribution of NaHSO<sub>4</sub> on the resulting pH. Shall the pH be below 6 and predominantly dependent by the NaHSO<sub>4</sub>, then further actions are required to demonstrate safe use.

**Tier 2a:** retrieve information on receiving water pH after the discharge point. The pH of the receiving water shall not be lower than 6. If the measures are not available, the pH in the river can be calculated as follows:

$$pH_{river} = \text{Log} \left[ \frac{Q_{effluent} * 10^{pH_{effluent}} + Q_{riverupstream} * 10^{pH_{upstream}}}{Q_{riverupstream} + Q_{effluent}} \right]$$

(Eq 1)

Where:

Q effluent refers to the effluent flow (in m<sup>3</sup>/day)

Q river upstream refers to the upstream river flow (in m<sup>3</sup>/day)

pH effluent refers to the pH of the effluent

pH upstream river refers to the pH of the river upstream of the discharge point

Please note that initially, default values can be used:

- Q river upstream flows: use the 10th of existing measurements distribution or use default value of 18000 m<sup>3</sup>/day
- Q effluent: use default value of 2000 m<sup>3</sup>/day
- The upstream pH is preferably a measured value. If not available, one can assume a neutral pH of 7 if this can be justified.

Such equation has to be seen as a worst case scenario, where water conditions are standard and not case specific.

**Tier 2b:** Equation 1 can be used to identify which effluent pH causes an acceptable pH level in the receiving body. In order to do so, pH of the river is set at value 6 and pH of the effluent is calculated accordingly (using default values as reported previously, if necessary). As temperature influences solubility, pH effluent might require to be adjusted on a case-by-case basis. Once the maximum admissible pH value in the effluent is established, it is assumed that the H<sup>+</sup> concentrations are all dependent on NaHSO<sub>4</sub> discharge and that there is no buffer capacity conditions to consider (this is a unrealistic worst case scenario, which can be modified where information is available). Maximum load of NaHSO<sub>4</sub> that can be annually rejected without negatively affecting the pH of the receiving water is calculated assuming chemical equilibrium. H<sup>+</sup> expressed as moles/litre is multiplied by average flow of the effluent and then divided by the molar mass of NaHSO<sub>4</sub>.

**Tier 3:** measure the pH in the receiving water after the discharge point. If pH is between 6 and 9, safe use is reasonably demonstrated and the ES ends here. If pH is found to be below 6, risk management measures have to be implemented: the effluent has to undergo neutralisation, thus ensuring safe use of NaHSO<sub>4</sub> during production or use phase.

## 9.2 Use of sodium hydrogensulfate as such or in preparation in professional settings

| Exposure Scenario Format (1) addressing uses carried out by workers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                               |                        |                  |                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|------------------|--------------------|
| 1. Title                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                               |                        |                  |                    |
| Free short title                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Use of sodium hydrogensulfate as such or in preparation in professional settings                                                                                                                                                                              |                        |                  |                    |
| Systematic title based on use descriptor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | SU22<br>PC14, PC15, PC20, PC35, PC37<br>PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC12, PROC13, PROC14, PROC15, PROC17, PROC19, PROC21, PROC24<br>ERC8-11                                                                          |                        |                  |                    |
| Processes, tasks and/or activities covered                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Processes, tasks and/or activities covered are described in Section 2 below.                                                                                                                                                                                  |                        |                  |                    |
| Assessment Method                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Occupational exposure: A qualitative assessment of inhalation and dermal exposure was conducted in the absence of any DNELs (derived no-effect levels) for inhalation and dermal exposure.<br>Environmental exposure: A qualitative assessment was conducted. |                        |                  |                    |
| 2. Operational conditions and risk management measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                               |                        |                  |                    |
| 2.1 Control of workers exposure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                               |                        |                  |                    |
| Product characteristic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                               |                        |                  |                    |
| <p>Sodium hydrogensulfate is produced and placed on the market as a pearled/granular product or in preparations having the same physical form. The rotating drum method (RDM) according to Heubach was used to determine the particle size distribution of the airborne fraction of dust generated during mechanical agitation simulating workplace conditions. This method provides a "total dustiness" value indicating the propensity of a material to become airborne, and thus serving as an indicator of the emission potential of the material under workplace conditions. The test resulted in a total dustiness of sodium hydrogensulfate of 0.8 % when simulating mechanical agitation (e.g. bagging, filling and mixing operations). According to the MEASE approach, the substance intrinsic emission potential could be assessed as very low – low.</p> <p>Thus, inhalation exposure to sodium hydrogensulfate is assumed to be negligible during all process steps in industrial and/or professional settings and the inhalation route is not a relevant exposure route for this substance. Under the prerequisite that all available (i.e. purchasable) forms of sodium hydrogensulfate are in accordance with the dustiness as documented above, human health is thereby considered to be sufficiently protected.</p> <p>It is noted that the substance intrinsic emission potential may be overwritten for specific processes by the process intrinsic emission potential. PROC 7 and PROC 11 as being spray applications in industrial and non-industrial settings, respectively, are assumed to result in a higher emission potential (it is also assumed that the physical form has to be modified to powder prior to spraying). Since PROC 21 and PROC 24 are considered as potential abrasive tasks, the emission potential is accordingly higher and the physical form is assumed to be wear dust during these tasks.</p> |                                                                                                                                                                                                                                                               |                        |                  |                    |
| PROC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Use in preparation                                                                                                                                                                                                                                            | Content in preparation | Physical form    | Emission potential |
| PROC 11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | not restricted                                                                                                                                                                                                                                                |                        | powder           | medium             |
| PROC 21, 24                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                               |                        | (wear) dust      | low – high         |
| All other applicable PROCs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                               |                        | pearls, granules | very low – low     |
| Amounts used                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                               |                        |                  |                    |
| The actual tonnage handled per shift is not considered to influence the exposure as such for this scenario. Instead, the combination of the scale of operation (industrial vs. professional) and level of containment/automation (as reflected in the PROC) is the main determinant of the process intrinsic emission potential.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                               |                        |                  |                    |
| Frequency and duration of use/exposure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                               |                        |                  |                    |
| PROC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Duration of exposure                                                                                                                                                                                                                                          |                        |                  |                    |
| PROC 11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Due to the high level of automation and measures at the process level (please see below), inhalation exposure is negligible and the exposure duration is consequently short (< 60 minutes).                                                                   |                        |                  |                    |
| All other applicable PROCs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | not restricted                                                                                                                                                                                                                                                |                        |                  |                    |
| Human factors not influenced by risk management                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                               |                        |                  |                    |
| The shift breathing volume during all process steps reflected in the PROCs is assumed to be 10 m³/shift (8 hours).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                               |                        |                  |                    |
| Other given operational conditions affecting workers exposure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                               |                        |                  |                    |
| Other operational conditions such as room volume, indoor or outdoor use, process temperature and process pressure are not considered relevant for the occupational exposure assessment of the conducted processes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                               |                        |                  |                    |

| Technical conditions and measures at process level (source) to prevent release                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                       |                                                                                                                                            |                                                                                                                                                                                                                                                                                                                       |
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| PROC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Level of containment                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                       | Level of segregation                                                                                                                       |                                                                                                                                                                                                                                                                                                                       |
| PROC 2, 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | closed process                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                       | not required                                                                                                                               |                                                                                                                                                                                                                                                                                                                       |
| PROC 11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | closed process                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                       | spraying in non-industrial settings has to be performed in segregated areas where direct exposure of the worker is excluded                |                                                                                                                                                                                                                                                                                                                       |
| All other applicable PROCs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Risk management measures at the process level (e.g. containment or segregation of the emission source) are generally not required in these processes since any potential inhalation exposure is assumed to be negligible due to the low dusty nature of sodium hydrogensulfate.                                                                      |                                                                                                                                                       |                                                                                                                                            |                                                                                                                                                                                                                                                                                                                       |
| Technical conditions and measures to control dispersion from source towards the worker                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                       |                                                                                                                                            |                                                                                                                                                                                                                                                                                                                       |
| PROC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Level of separation                                                                                                                                                                                                                                                                                                                                  | Localised controls (LC)                                                                                                                               | Efficiency of LC (according to MEASE)                                                                                                      | Further information                                                                                                                                                                                                                                                                                                   |
| PROC 11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Any potentially required separation of workers from the emission source is indicated above under "Frequency and duration of exposure". A reduction of exposure duration can be achieved, for example, by the installation of ventilated (positive pressure) control rooms or by removing the worker from workplaces involved with relevant exposure. | Efficient ventilation of the area (e.g. local exhaust ventilation) is recommended to minimise any potential emission of wear dust into workplace air. | 78 %                                                                                                                                       | -                                                                                                                                                                                                                                                                                                                     |
| All other applicable PROCs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Separation of workers from the emission source is generally not required in the conducted processes.                                                                                                                                                                                                                                                 |                                                                                                                                                       |                                                                                                                                            |                                                                                                                                                                                                                                                                                                                       |
| Organisational measures to prevent /limit releases, dispersion and exposure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                       |                                                                                                                                            |                                                                                                                                                                                                                                                                                                                       |
| Avoid inhalation or ingestion. General occupational hygiene measures are required to ensure safe handling of the substance. Good occupational hygiene practices have to be followed (e.g. shower and change clothes at end of work shift) to avoid any contamination of private households via the work-home-interface. Do not eat and smoke in the workplace. Unless otherwise stated below, wear standard working clothes and shoes. Do not wear contaminated clothing at home. Do not blow dust off with compressed air. Regular training in workplace hygiene practice and proper use of personal protective equipment is required.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                       |                                                                                                                                            |                                                                                                                                                                                                                                                                                                                       |
| Conditions and measures related to personal protection, hygiene and health evaluation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                       |                                                                                                                                            |                                                                                                                                                                                                                                                                                                                       |
| PROC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Specification of respiratory protective equipment (RPE)                                                                                                                                                                                                                                                                                              | RPE efficiency (assigned protection factor, APF)                                                                                                      | Specification of gloves                                                                                                                    | Further personal protective equipment (PPE)                                                                                                                                                                                                                                                                           |
| All applicable PROCs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | If ventilation is insufficient and/or formation of relevant dust levels cannot be excluded, use RPE according to EN143 and EN149.<br>An FFP2 mask should be worn for safety reasons when packaging/unpacking sodium hydrogensulfate since high abrasion may occur.                                                                                   | (APF=10, for safety reasons during processes where relevant dust levels and high abrasion may occur)                                                  | In cases where extensive direct contact with sodium hydrogensulfate cannot be avoided, wear suitable protective gloves according to EN374. | Eye protection equipment (e.g. goggles or visors) conforming to EN166 must be worn, unless potential contact with the eye can be excluded by the nature and type of application (i.e. closed process).<br>Additionally, face protection, protective clothing and safety shoes are required to be worn as appropriate. |
| Any RPE as defined above shall only be worn if the following principles are implemented in parallel: The duration of work (compare with "duration of exposure" above) should reflect the additional physiological stress for the worker due to the breathing resistance and mass of the RPE itself, due to the increased thermal stress by enclosing the head. In addition, it shall be considered that the worker's capability of using tools and of communicating are reduced during the wearing of RPE.<br>For reasons as given above, the worker should therefore be (i) healthy (especially in view of medical problems that may affect the use of RPE), (ii) have suitable facial characteristics reducing leakages between face and mask (in view of scars and facial hair). The recommended devices above which rely on a tight face seal will not provide the required protection unless they fit the contours of the face properly and securely.<br>The employer and self-employed persons have legal responsibilities for the maintenance and issue of respiratory protective devices and the management of their correct use in the workplace. Therefore, they should define and document a suitable policy for a respiratory protective device programme including training of the workers.<br>An overview of the APFs of different RPE (according to BS EN 529:2005) can be found in the glossary of MEASE. |                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                       |                                                                                                                                            |                                                                                                                                                                                                                                                                                                                       |

| 2.2 Control of environmental exposure                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                    |                                                                                                                                                                                                                                                         |                                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| Amounts used                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                    |                                                                                                                                                                                                                                                         |                                |
| The daily and annual amount per site (for point sources) is not considered to be the main determinant for environmental exposure. In this scenario the emissions of NaHSO <sub>4</sub> are considered in lower amounts and on a larger scale due to professional and/or consumer use. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                    |                                                                                                                                                                                                                                                         |                                |
| Frequency and duration of use                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                    |                                                                                                                                                                                                                                                         |                                |
| Due to the wide dispersive aspect of the scenario a continuous release is assumed.                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                    |                                                                                                                                                                                                                                                         |                                |
| Environment factors not influenced by risk management                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                    |                                                                                                                                                                                                                                                         |                                |
| Flow rate of receiving surface water: 18000 m3/day                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                    |                                                                                                                                                                                                                                                         |                                |
| Other given operational conditions affecting environmental exposure                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                    |                                                                                                                                                                                                                                                         |                                |
| Effluent discharge rate of the STP: 2000 m3/day                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                    |                                                                                                                                                                                                                                                         |                                |
| Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                    |                                                                                                                                                                                                                                                         |                                |
| No risk management measure can be assumed for professional and/or consumer uses. All waste water resulting from use (cleaning, pH-regulator in swimming pools) of NaHSO <sub>4</sub> is assumed to be directed to a municipal STP (default setting according to ECHA guidance R16).   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                    |                                                                                                                                                                                                                                                         |                                |
| Conditions and measures related to waste                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                    |                                                                                                                                                                                                                                                         |                                |
| Not relevant                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                    |                                                                                                                                                                                                                                                         |                                |
| 3. Exposure estimation and reference to its source                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                    |                                                                                                                                                                                                                                                         |                                |
| Occupational exposure                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                    |                                                                                                                                                                                                                                                         |                                |
| PROC                                                                                                                                                                                                                                                                                  | Method used for inhalation exposure assessment (refer to introduction)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Inhalation exposure estimate (RCR) | Method used for dermal exposure assessment                                                                                                                                                                                                              | Dermal exposure estimate (RCR) |
| All applicable PROCs                                                                                                                                                                                                                                                                  | Since sodium hydrogensulfate has a low dustiness (<1 % as obtained in rotating drum testing), inhalation exposure during all process steps is assumed to be negligible if the proposed risk management measures as described above are met.                                                                                                                                                                                                                                                                                                                                                                         |                                    | Due to the negligible dermal absorption of sodium hydrogensulfate, the dermal route is not a relevant exposure path for sodium hydrogensulfate and a dermal DNEL has not been derived. Thus, dermal exposure is not assessed in this exposure scenario. |                                |
| Environmental emissions                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                    |                                                                                                                                                                                                                                                         |                                |
| Environmental emissions                                                                                                                                                                                                                                                               | Wide dispersive uses of NaHSO <sub>4</sub> usually use diluted products. The small amounts of NaHSO <sub>4</sub> will entirely end up in the sewer where they will further be neutralized quickly by the buffer capacity of the wastewater before reaching a STP or surface water. The influent of a municipal STP is typically tested for pH and, if needed, adjusted before entering the biological step. The effluent of a municipal STP is usually circum-neutral.                                                                                                                                              |                                    |                                                                                                                                                                                                                                                         |                                |
| Exposure concentration in waste water treatment plant                                                                                                                                                                                                                                 | Since the municipal STP usually monitors the pH of the influent and neutralize accordingly if needed, there is no pH impact expected on the microbiological activity in the municipal STP.                                                                                                                                                                                                                                                                                                                                                                                                                          |                                    |                                                                                                                                                                                                                                                         |                                |
| Exposure concentration in aquatic pelagic compartment                                                                                                                                                                                                                                 | When NaHSO <sub>4</sub> is emitted to surface water, sorption to particulate matter and sediment will be negligible. When NaHSO <sub>4</sub> is rejected to surface water, the pH may decrease, depending on the buffer capacity of the water. The higher the buffer capacity of the water, the lower the effect on pH will be. In general the buffer capacity preventing shifts in acidity or alkalinity in natural waters is regulated by the equilibrium between carbon dioxide (CO <sub>2</sub> ), the bicarbonate ion (HCO <sub>3</sub> <sup>-</sup> ) and the carbonate ion (CO <sub>3</sub> <sup>2-</sup> ). |                                    |                                                                                                                                                                                                                                                         |                                |
| Exposure concentration in sediments                                                                                                                                                                                                                                                   | The sediment compartment is not included in this ES, because it is not considered relevant for NaHSO <sub>4</sub> : when NaHSO <sub>4</sub> is emitted to the aquatic compartment, sorption of to sediment particles is negligible.                                                                                                                                                                                                                                                                                                                                                                                 |                                    |                                                                                                                                                                                                                                                         |                                |
| Exposure concentrations in soil and groundwater                                                                                                                                                                                                                                       | The terrestrial compartment is not included in this exposure scenario, because it is not considered to be relevant.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                    |                                                                                                                                                                                                                                                         |                                |
| Exposure concentration in atmospheric compartment                                                                                                                                                                                                                                     | The air compartment is not included in this CSA because it is considered not relevant for NaHSO <sub>4</sub> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                    |                                                                                                                                                                                                                                                         |                                |
| Exposure concentration relevant for the food chain (secondary poisoning)                                                                                                                                                                                                              | Bioaccumulation in organisms is not relevant for NaHSO <sub>4</sub> : a risk assessment for secondary poisoning is therefore not required.                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                    |                                                                                                                                                                                                                                                         |                                |

#### 4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

##### Occupational exposure

The DU works inside the boundaries set by the ES if he handles sodium hydrogensulfate having the same properties with regard to dustiness as described in this ES and if the proposed risk management measures as described above are met. A dustiness assessment can be made either on a qualitative or on a quantitative basis. For a qualitative assessment the MEASE glossary ([www.ebrc.de/mease.html](http://www.ebrc.de/mease.html)) can be consulted, which provides guidance on this topic. A quantitative assessment can be done by conducting a dustiness test with the specific material according to the rotating drum method. It is however noted that also other dustiness tests exist, which may be used instead. For further details please refer to the European Standard EN 15051 titled "Workplace atmospheres – Measurement of the dustiness of bulk materials – Requirements and reference test methods".

##### Environmental emissions

not relevant for consumers/professionals

## 9.3 Consumer use of cleaning products containing sodium hydrogensulfate

| Appendix 2: Exposure Scenario Format (2) addressing uses carried out by consumers |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |                          |                  |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|------------------|
| 1. Title                                                                          |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |                          |                  |
| Free short title                                                                  |                                                                                                                                                                                                                                                                                | Consumer use of cleaning products containing sodium hydrogensulfate                                                                                                                                                                                              |                          |                  |
| Systematic title based on use descriptor                                          |                                                                                                                                                                                                                                                                                | SU21, PC35, ERC 8a                                                                                                                                                                                                                                               |                          |                  |
| Processes, tasks activities covered                                               |                                                                                                                                                                                                                                                                                | Tasks and activities covered are described in section 2 below.                                                                                                                                                                                                   |                          |                  |
| Assessment Method*                                                                |                                                                                                                                                                                                                                                                                | Human health<br>No exposure estimation was performed for the dermal route.<br>A quantitative assessment was performed for inhalation and the oral route using the HERA guidance document as a guide.<br>Environment:<br>A qualitative justification is provided. |                          |                  |
| 2. Operational conditions and risk management measures                            |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |                          |                  |
| RMM                                                                               | The solid products will be in form of pearls or granules as manufactured, having a low-very low dust formation potential.                                                                                                                                                      |                                                                                                                                                                                                                                                                  |                          |                  |
| PC/ERC                                                                            | Description                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                  |                          |                  |
| PC 35                                                                             | Cleaners (all purpose cleaners, sanitary products): <ul style="list-style-type: none"><li>• Surface cleaning.</li><li>• Pouring of liquid concentrate or solid granules.</li></ul> Toilet cleaner: <ul style="list-style-type: none"><li>• Pouring of solid granules</li></ul> |                                                                                                                                                                                                                                                                  |                          |                  |
| ERC 8a                                                                            | Wide dispersive indoor use of processing aids in open systems                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                  |                          |                  |
| 2.1 Control of consumers exposure                                                 |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |                          |                  |
| Product characteristic                                                            |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |                          |                  |
| Description of the preparation                                                    | Concentration of the substance in the preparation                                                                                                                                                                                                                              | Physical state of the preparation                                                                                                                                                                                                                                | Dustiness (if relevant)  | Packaging design |
| Acid surface cleaner (l)                                                          | 6%                                                                                                                                                                                                                                                                             | liquid                                                                                                                                                                                                                                                           | NR                       | 0.75 – 1L        |
| Acid surface cleaner (s)                                                          | 10%                                                                                                                                                                                                                                                                            | Solid, pearls                                                                                                                                                                                                                                                    | Very low                 | 0.75 – 1L        |
| Toilet cleaner (s)                                                                | 80%                                                                                                                                                                                                                                                                            | Solid, pearls                                                                                                                                                                                                                                                    | Very low                 | 0.75 – 1L        |
| Amounts used                                                                      |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |                          |                  |
| Description of the preparation                                                    | Amount used per event                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                  | Source of information    |                  |
| Acid surface cleaner (l)                                                          | Typical: 60g per 5L = 12g/L<br>Max: 110g per 5L = 22g/L                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                  | (HERA, 2005, Appendix F) |                  |
| Acid surface cleaner (s)                                                          | Max: 40g per 5L = 8g/L                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                  | (HERA, 2005, Appendix F) |                  |
| Toilet cleaner (s)                                                                | Typical: 20g<br>Max: 30g                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                  | (HERA, 2005, Appendix F) |                  |
| Frequency and duration of use/exposure                                            |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                  |                          |                  |
| Description of the preparation                                                    | Duration of exposure per event                                                                                                                                                                                                                                                 | frequency of events                                                                                                                                                                                                                                              | Source of information    |                  |
| Acid surface cleaner (l)                                                          | 20 min (max)                                                                                                                                                                                                                                                                   | Up to 7 tasks per week (max)                                                                                                                                                                                                                                     | (HERA, 2005, Appendix F) |                  |
| Acid surface cleaner (s)                                                          | 20 min (max)                                                                                                                                                                                                                                                                   | Up to 7 tasks per week (max)                                                                                                                                                                                                                                     | (HERA, 2005, Appendix F) |                  |
| Toilet cleaner (s)                                                                | < 1min                                                                                                                                                                                                                                                                         | Up to 2 tasks per week (max)                                                                                                                                                                                                                                     | (HERA, 2005, Appendix F) |                  |

| Appendix 2: Exposure Scenario Format (2) addressing uses carried out by consumers                                                                                                                                                 |                                                                                                                                                                                  |                             |                   |                                            |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-------------------|--------------------------------------------|
| Human factors not influenced by risk management                                                                                                                                                                                   |                                                                                                                                                                                  |                             |                   |                                            |
| Description of the preparation                                                                                                                                                                                                    | Population exposed                                                                                                                                                               | Body weight (BW) [kg]       | Exposed body part | Corresponding skin area [cm <sup>2</sup> ] |
| Acid surface cleaner (l)                                                                                                                                                                                                          | adult                                                                                                                                                                            | 60 (HERA, 2005, Appendix G) | Hands             | 857.5                                      |
| Acid surface cleaner (s)                                                                                                                                                                                                          | Adult                                                                                                                                                                            |                             | Hands             | 857.5                                      |
| Toilet cleaner (s)                                                                                                                                                                                                                | adult                                                                                                                                                                            |                             | Only splashes     | -                                          |
| Other given operational conditions affecting consumers exposure                                                                                                                                                                   |                                                                                                                                                                                  |                             |                   |                                            |
| Film thickness on skin                                                                                                                                                                                                            | 0.01cm (HERA, 2005, Appendix G)                                                                                                                                                  |                             |                   |                                            |
| Conditions and measures related to information and behavioural advice to consumers                                                                                                                                                |                                                                                                                                                                                  |                             |                   |                                            |
| <p>Do not get in eyes.</p> <p>Keep container closed and out of reach of children.</p> <p>In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.</p> <p>Wash thoroughly after handling.</p> |                                                                                                                                                                                  |                             |                   |                                            |
| Conditions and measures related to personal protection and hygiene                                                                                                                                                                |                                                                                                                                                                                  |                             |                   |                                            |
| Wear suitable goggles.                                                                                                                                                                                                            |                                                                                                                                                                                  |                             |                   |                                            |
| 2.2 Control of environmental exposure                                                                                                                                                                                             |                                                                                                                                                                                  |                             |                   |                                            |
| Product characteristics                                                                                                                                                                                                           |                                                                                                                                                                                  |                             |                   |                                            |
| Not relevant for exposure assessment                                                                                                                                                                                              |                                                                                                                                                                                  |                             |                   |                                            |
| Amounts used*                                                                                                                                                                                                                     |                                                                                                                                                                                  |                             |                   |                                            |
| Not relevant for exposure assessment                                                                                                                                                                                              |                                                                                                                                                                                  |                             |                   |                                            |
| Frequency and duration of use                                                                                                                                                                                                     |                                                                                                                                                                                  |                             |                   |                                            |
| Not relevant for exposure assessment                                                                                                                                                                                              |                                                                                                                                                                                  |                             |                   |                                            |
| Environment factors not influenced by risk management                                                                                                                                                                             |                                                                                                                                                                                  |                             |                   |                                            |
| Default river flow and dilution                                                                                                                                                                                                   |                                                                                                                                                                                  |                             |                   |                                            |
| Other given operational conditions affecting environmental exposure                                                                                                                                                               |                                                                                                                                                                                  |                             |                   |                                            |
| Indoor and outdoor                                                                                                                                                                                                                |                                                                                                                                                                                  |                             |                   |                                            |
| Conditions and measures related to municipal sewage treatment plant                                                                                                                                                               |                                                                                                                                                                                  |                             |                   |                                            |
| Default size of municipal sewage system/treatment plant and sludge treatment technique                                                                                                                                            |                                                                                                                                                                                  |                             |                   |                                            |
| Conditions and measures related to external treatment of waste for disposal                                                                                                                                                       |                                                                                                                                                                                  |                             |                   |                                            |
| Not relevant for exposure assessment                                                                                                                                                                                              |                                                                                                                                                                                  |                             |                   |                                            |
| Conditions and measures related to external recovery of waste                                                                                                                                                                     |                                                                                                                                                                                  |                             |                   |                                            |
| Not relevant for exposure assessment                                                                                                                                                                                              |                                                                                                                                                                                  |                             |                   |                                            |
| 3. Exposure estimation and reference to its source                                                                                                                                                                                |                                                                                                                                                                                  |                             |                   |                                            |
| Since sodium hydrogensulfate is classified as irritating to eyes (eye dam.1) a qualitative assessment has been performed for exposure to the eye.                                                                                 |                                                                                                                                                                                  |                             |                   |                                            |
| Human exposure                                                                                                                                                                                                                    |                                                                                                                                                                                  |                             |                   |                                            |
| Acid surface cleaner (l), Acid surface cleaner (s), Toilet cleaner (s)                                                                                                                                                            |                                                                                                                                                                                  |                             |                   |                                            |
| Route of exposure                                                                                                                                                                                                                 | Method used, comments                                                                                                                                                            |                             |                   |                                            |
| Oral                                                                                                                                                                                                                              | <p>Qualitative assessment</p> <p>Oral uptake of sodium hydrogensulfate via the use of household cleaning products is considered negligible under normal handling conditions.</p> |                             |                   |                                            |
| Dermal                                                                                                                                                                                                                            | No local effects are known after dermal exposure. Furthermore, dermal absorption is considered negligible and                                                                    |                             |                   |                                            |

| <b>Appendix 2: Exposure Scenario Format (2) addressing uses carried out by consumers</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | there are no data available which indicate systemic toxicity following this route. Thus, dermal exposure is not assessed in this exposure scenario.                                                                                                                                                                                                                                                                                                                                                                  |
| Eye                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p>Qualitative assessment</p> <p>Exposure to the eyes is not expected as part of the intended product use.</p> <p>Solid: As the product is of low-very low dustiness no dust formation is expected.</p> <p>Liquid: Splashes into the eyes cannot be excluded if no protective goggles are worn during the application. However, this will mainly be to the diluted application solution (&lt;1% NaHSO<sub>4</sub>). Therefore mild irritation can easily be avoided by immediate rinsing of the eyes with water.</p> |
| Inhalation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Sodium hydrogensulfate has a low dustiness (<1 % as obtained in rotating drum testing), therefore inhalation exposure during use of solid sodium hydrogensulfate pearls is assumed to be negligible. Thus, inhalation exposure is not assessed in this exposure scenario.                                                                                                                                                                                                                                            |
| <b>Environmental exposure</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <p>The pH impact due to use of sodium hydrogensulfate in household cleaning products is expected to be negligible. The influent of a municipal wastewater treatment plant is often neutralized anyway and sodium hydrogensulfate may even be used beneficially for pH control of basic wastewater streams that are treated in biological WWTPs. Since the pH of the influent of the municipal treatment plant is circum neutral, the pH impact is negligible on the receiving environmental compartments, such as surface water, sediment and terrestrial compartment.</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <p>The DU works inside the boundaries set by the ES if sodium hydrogensulfate is either marked as a liquid preparation or in case of a solid preparation sodium hydrogensulfate is used as manufactured and not further processed to get smaller particles.</p>                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## 9.4 Consumer use of sodium hydrogensulfate as pH-regulator for swimming pools

| Appendix 2: Exposure Scenario Format (2) addressing uses carried out by consumers |                                                                                                                                                                                                                                                                                                                                                                          |                                                                    |                         |                  |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|-------------------------|------------------|
| 1. Title                                                                          |                                                                                                                                                                                                                                                                                                                                                                          |                                                                    |                         |                  |
| Free short title                                                                  | Consumer use of sodium hydrogensulfate as pH-regulator for swimming pools                                                                                                                                                                                                                                                                                                |                                                                    |                         |                  |
| Systematic title based on use descriptor                                          | SU21, PC20, 37, ERC 8                                                                                                                                                                                                                                                                                                                                                    |                                                                    |                         |                  |
| Processes, tasks activities covered                                               | Tasks and activities covered are described in section 2 below.                                                                                                                                                                                                                                                                                                           |                                                                    |                         |                  |
| Assessment Method*                                                                | <p>Human health</p> <p>Human exposure has been assessed on a qualitative basis. Nevertheless the US EPA Standard operating procedures (SOPs) for residential exposure assessment – swimming pools (US EPA, 1997) has been used as a guide.</p> <p>Environment:</p> <p>A qualitative justification is provided.</p>                                                       |                                                                    |                         |                  |
| 2. Operational conditions and risk management measures                            |                                                                                                                                                                                                                                                                                                                                                                          |                                                                    |                         |                  |
| PC/ERC                                                                            | Description                                                                                                                                                                                                                                                                                                                                                              |                                                                    |                         |                  |
| PC 20, 37                                                                         | <p><b>Applying of pH-regulator to swimming pools:</b></p> <p>Manual filling/pouring of sodium hydrogensulfate into swimming pool (large amount).</p> <p>Preparation of sodium hydrogensulfate solution for further application/pouring of sodium hydrogensulfate into water (small amount).</p> <p>Dropwise application of sodium hydrogensulfate solution to water.</p> |                                                                    |                         |                  |
| ERC 8                                                                             | Wide dispersive use                                                                                                                                                                                                                                                                                                                                                      |                                                                    |                         |                  |
| 2.1 Control of consumers exposure                                                 |                                                                                                                                                                                                                                                                                                                                                                          |                                                                    |                         |                  |
| Product characteristic                                                            |                                                                                                                                                                                                                                                                                                                                                                          |                                                                    |                         |                  |
| Description of the preparation                                                    | Concentration of the substance in the preparation                                                                                                                                                                                                                                                                                                                        | Physical state of the preparation                                  | Dustiness (if relevant) | Packaging design |
| pH-regulator for swimming pools (solid)                                           | 100%                                                                                                                                                                                                                                                                                                                                                                     | granular                                                           | Very low (beads)        | 1 – 5 kg         |
| pH-regulator for swimming pools (liquid)                                          | ≤ 50%                                                                                                                                                                                                                                                                                                                                                                    | liquid                                                             | NR                      | 1 – 5 L          |
| Amounts used                                                                      |                                                                                                                                                                                                                                                                                                                                                                          |                                                                    |                         |                  |
| Description of the preparation                                                    | Amount used per event                                                                                                                                                                                                                                                                                                                                                    | Source of information                                              |                         |                  |
| pH-regulator for swimming pools (solid)                                           | depending on the pH of water and size of swimming pool :<br>10g to reduce the pH by 0.1 per 1m <sup>3</sup> swimmingpool water.                                                                                                                                                                                                                                          | Instructions by producer.                                          |                         |                  |
| pH-regulator for swimming pools (liquid)                                          | 10% solution (1kg/10L water)                                                                                                                                                                                                                                                                                                                                             | Instructions by producer.                                          |                         |                  |
| Post-application ingestion                                                        | 0.05L/h                                                                                                                                                                                                                                                                                                                                                                  | US EPA, SOPs for residential exposure assessments – swimming pools |                         |                  |
| Frequency and duration of use/exposure                                            |                                                                                                                                                                                                                                                                                                                                                                          |                                                                    |                         |                  |
| Description of task                                                               | Duration of exposure per event                                                                                                                                                                                                                                                                                                                                           | frequency of events                                                |                         |                  |
| Pouring of granules                                                               | 1.33 min<br>(DIY-fact sheet, RIVM, Chapter 2.4.2 Mixing and loading of powders)                                                                                                                                                                                                                                                                                          | 1 task/week                                                        |                         |                  |
| Dropwise application of                                                           | Several minutes - hours                                                                                                                                                                                                                                                                                                                                                  | 1 task/ month                                                      |                         |                  |

| Appendix 2: Exposure Scenario Format (2) addressing uses carried out by consumers                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                            |                              |                          |                                                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|--------------------------|-------------------------------------------------|
| <b>solution</b>                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                            |                              |                          |                                                 |
| <b>Post-application ingestion</b>                                                                                                                                                                                                                                                                                                                                                                                  | 5h (child of 6 years)<br>6h (adults)<br>90 <sup>th</sup> percentile value for time spent at home in the pool (US EPA, 1996: Exposure factors handbook, EPA/600/P-95/002Ba) | daily                        |                          |                                                 |
| <b>Human factors not influenced by risk management</b>                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                            |                              |                          |                                                 |
| <b>Description of task</b>                                                                                                                                                                                                                                                                                                                                                                                         | <b>Population exposed</b>                                                                                                                                                  | <b>Body weight (BW) [kg]</b> | <b>Exposed body part</b> | <b>Corresponding skin area [cm<sup>2</sup>]</b> |
| <b>Pouring of granules</b>                                                                                                                                                                                                                                                                                                                                                                                         | adult                                                                                                                                                                      | 60                           | Half of both hands       | 430                                             |
| <b>Dropwise application of solution</b>                                                                                                                                                                                                                                                                                                                                                                            | Adult                                                                                                                                                                      |                              | Hands                    | 860                                             |
| <b>Post-application ingestion</b>                                                                                                                                                                                                                                                                                                                                                                                  | Child (6 years)<br>Adult                                                                                                                                                   | 22<br>60                     | -                        | -                                               |
| <b>Other given operational conditions affecting consumers exposure</b>                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                            |                              |                          |                                                 |
| <b>Film thickness on skin</b>                                                                                                                                                                                                                                                                                                                                                                                      | 0.01cm (HERA, 2005, Appendix G)                                                                                                                                            |                              |                          |                                                 |
| <b>Conditions and measures related to information and behavioural advice to consumers</b>                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                            |                              |                          |                                                 |
| <p>Do not get in eyes.</p> <p>Keep container closed and out of reach of children.</p> <p>In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.</p> <p>Wash thoroughly after handling.</p> <p>Assure an equal distribution of the salt by running the circulating pump for 4-6h and measure the pH to be in the desired range between 7.0-7.4 before swimming pool use.</p> |                                                                                                                                                                            |                              |                          |                                                 |
| <b>Conditions and measures related to personal protection and hygiene</b>                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                            |                              |                          |                                                 |
| Wear suitable goggles.                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                            |                              |                          |                                                 |
| <b>2.2 Control of environmental exposure</b>                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                            |                              |                          |                                                 |
| <b>Product characteristics</b>                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                            |                              |                          |                                                 |
| Not relevant for exposure assessment                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                            |                              |                          |                                                 |
| <b>Amounts used*</b>                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                            |                              |                          |                                                 |
| Not relevant for exposure assessment                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                            |                              |                          |                                                 |
| <b>Frequency and duration of use</b>                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                            |                              |                          |                                                 |
| Not relevant for exposure assessment                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                            |                              |                          |                                                 |
| <b>Environment factors not influenced by risk management</b>                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                            |                              |                          |                                                 |
| Default river flow and dilution                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                            |                              |                          |                                                 |
| <b>Other given operational conditions affecting environmental exposure</b>                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                            |                              |                          |                                                 |
| Indoor and outdoor                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                            |                              |                          |                                                 |
| <b>Conditions and measures related to municipal sewage treatment plant</b>                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                            |                              |                          |                                                 |
| Default size of municipal sewage system/treatment plant and sludge treatment technique                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                            |                              |                          |                                                 |
| <b>Conditions and measures related to external treatment of waste for disposal</b>                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                            |                              |                          |                                                 |
| Not relevant for exposure assessment                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                            |                              |                          |                                                 |
| <b>Conditions and measures related to external recovery of waste</b>                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                            |                              |                          |                                                 |
| Not relevant for exposure assessment                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                            |                              |                          |                                                 |
| <b>3. Exposure estimation and reference to its source</b>                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                            |                              |                          |                                                 |
| Since sodium hydrogensulfate is classified as irritating to eyes (eye dam.1) a qualitative assessment has been performed for exposure                                                                                                                                                                                                                                                                              |                                                                                                                                                                            |                              |                          |                                                 |

| <b>Appendix 2: Exposure Scenario Format (2) addressing uses carried out by consumers</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| to the eye.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Human exposure</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Use of pH-regulator for swimming pools</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Route of exposure</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>Method used, comments</b>                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Oral                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Qualitative assessment<br>Oral uptake of sodium hydrogensulfate as pH-regulator of swimming pools is not considered under normal handling conditions.                                                                                                                                                                                                                                                                                                            |
| Dermal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | No local effects are known after dermal exposure. Furthermore, dermal absorption is considered negligible and there are no data available which indicate systemic toxicity following this route. Thus, dermal exposure is not assessed in this exposure scenario.                                                                                                                                                                                                |
| Inhalation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Sodium hydrogensulfate has a low dustiness (<1 % as obtained in rotating drum testing), therefore inhalation exposure during use of solid sodium hydrogensulfate pearls is assumed to be negligible. Thus, inhalation exposure is not assessed in this exposure scenario.                                                                                                                                                                                        |
| Eye                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Qualitative assessment<br>Exposure to the eyes is not expected as part of the intended product use.<br>Solid: As the product is of low-very low dustiness no dust formation is expected.<br>Liquid: However, splashes into the eyes cannot be excluded if no protective goggles are worn during the task described. Prompt rinsing with water and seeking medical advice after accidental exposure is advisable.                                                 |
| <b>Post-application ingestion:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Route of exposure</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>Method used, comments</b>                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Oral                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Qualitative assessment:<br>Sodium hydrogensulfate will dissolve in water to sodium and sulphate ions and will reduce the pH of the swimming pool water. If an equal distribution of the salt has been secured and the pH was measured to be in the desired range between 7.0-7.4 no local effects need to be suspected. No systemic effects are expected from the oral uptake, as these ions are omnipresent in nature and normal constituent of the human body. |
| <b>Environmental exposure</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| The pH impact due to use of sodium hydrogensulfate as pH-regulator in residential swimming pools is expected to be negligible, as under normal use conditions the desired effect is to neutralize the pH of the swimming pool water. However, the influent of a municipal wastewater treatment plant is often neutralized anyway and sodium hydrogensulfate may even be used beneficially for pH control of basic wastewater streams that are treated in biological WWTPs. Since the pH of the influent of the municipal treatment plant is circumneutral, the pH impact is negligible on the receiving environmental compartments, such as surface water, sediment and terrestrial compartment. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| The DU works inside the boundaries set by the ES if sodium hydrogensulfate is either marked as a liquid preparation or in case of a solid preparation sodium hydrogensulfate is used as manufactured and not further processed to get smaller particles.                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

## **10 Risk Characterisation**

### **10.1 Industrial uses of NaHSO<sub>4</sub>**

#### **10.1.1 Occupational exposure**

Please refer to Section 3 of exposure scenario 9.1. Inhalation and dermal exposure have been addressed qualitatively in the absence of any DNELs (derived no-effect levels).

#### **10.1.2 Environmental exposure**

As shown in the exposure scenario 9.1, no exposure to NaHSO<sub>4</sub> is expected to occur in sediments, soil and groundwater or atmospheric compartment.

##### **10.1.2.1 Aquatic compartment (including microbiological activity in STP)**

The risk characterisation is only performed for the aquatic environment compartment, when applicable including STPs/WWTPs, as emissions of NaHSO<sub>4</sub> in the different life-cycle stages (production and use) mainly apply to (waste) water.

Discharges of NaHSO<sub>4</sub> from production and use to STPs/WWTPs and receiving waters are generally well controlled. Additionally, national regulations often require pH control of the wastewaters, to protect surface waters from pH changes. Where a significant pH change cannot be excluded, neutralisation of NaHSO<sub>4</sub> containing wastewaters and effluents applies.

Therefore, the aquatic compartment is adequately protected with respect to pH changes.

### **10.2 Wide dispersive uses of NaHSO<sub>4</sub>**

#### **10.2.1 Occupational exposure**

Please refer to Section 3 of exposure scenario 9.2. Inhalation and dermal exposure have been addressed qualitatively in the absence of any DNELs (derived no-effect levels).

#### **10.2.2 Environmental exposure**

##### **10.2.2.1 Aquatic compartment (including microbiological activity in STP)**

The risk characterisation is only performed for the aquatic environment compartment and the municipal STPs, as emissions of NaHSO<sub>4</sub> in the different life-cycle stages mainly apply to (waste) water.

Discharges of NaHSO<sub>4</sub> from wide dispersive use to the STPs are generally quickly neutralized in the sewer. Additionally, the municipal STP will analyse the pH of the influent and effluent to protect the biological step in the STP and the receiving water from pH changes. Where a significant pH change cannot be excluded, neutralisation of NaHSO<sub>4</sub> containing wastewaters applies.

Therefore, the aquatic compartment is adequately protected with respect to pH changes.

## **10.3 Consumer uses of NaHSO<sub>4</sub>**

### **10.3.1 Consumer exposure**

No quantitative assessment has been performed; therefore no risk characterisation ratio (RCR) has been derived.

Regarding the irritant effect to the eyes sodium hydrogensulfate can be allocated to the severe hazard category on the basis that exposure to such irritant substances should be avoided. Exposure to the eyes is not expected as part of the intended product use. However, accidental splashes cannot be excluded. However, it can be assumed that this would be to the diluted form rather than the concentrate. Therefore, mild irritation can easily be avoided by immediate rinsing of the eyes with water.

### **10.3.2 Environmental exposure**

Consumer uses relate to already diluted products which will further be neutralized quickly in the sewer, well before reaching a WWTP or surface water. The influent of municipal treatment plants is usually neutralized anyway. Therefore, consumer use of sodium hydrogensulfate is adequately under control for the environment.