

## **Succinct summary of representative risk management measures (RMMs) and operational conditions (OCs)**

### Public version

Substance: Annex XIV entry #42: 4-(1,1,3,3-tetramethylbutyl)phenol, ethoxylate, covering well-defined substances and UVCB substances, polymers and homologues

(Triton™ X-100, Triton™ X-405)

Applicant: Siemens Healthcare Diagnostics Products GmbH

Uses:

- Use #1: Use at industrial sites – Use of OPE in isolation of protein from recombinant cell cultures for the production of IVD kits (protein cell extraction)
- Use #2: Use of OPE in formulation of IVD kit reagents
- Use #3: Use of OPE in formulation of IVD wash solutions

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**Exposure Scenario (ES) 1: Use at industrial sites – Use of OPE in isolation of protein from recombinant cell cultures for the production of IVD kits (protein cell extraction)**

ECS and WCS	Task (ERC/spERC or PROC)	Annual amount per site (2021)	Technical RMMs, including:	Organisational RMMs, including:	PPE (characteristics)	Other conditions	Effectiveness of wastewater and waste air treatment (for ERC)	Release factors: water, air and soil (for ERC)	Detailed info. in CSR (section)
<b>ECS 1</b>	ERC 4 Use of OPE in isolation of protein from recombinant cell cultures for the production of IVD kits (protein cell extraction)	#A (1-10) kg	<ul style="list-style-type: none"> <li>- dedicated areas with limited access</li> <li>- collection and segregation of OPnEO containing solutions after use**</li> <li>- solid materials potentially in contact with OPE are collected and sent for incineration</li> <li>- off-site incineration of hazardous liquid waste**</li> </ul>	<ul style="list-style-type: none"> <li>- only well trained personnel*</li> <li>- losses of OPE and reagents minimised by careful rinsing and emptying of equipment</li> <li>- high laboratory and hygienic standard*</li> <li>- local operating procedures on               <ul style="list-style-type: none"> <li>a) cleaning accidental spills**</li> <li>b) maintenance of all equipment once per year</li> </ul> </li> </ul>			> 90% (due to segregation and disposal as hazardous waste)	water: < 10 % air: no release soil: no release	9
<b>WCS 1</b>	PROC 8a, PROC 5: Weighting and mixing of cell lysis solution		<ul style="list-style-type: none"> <li>- dedicated areas with limited access</li> <li>- basic general ventilation</li> </ul>	<ul style="list-style-type: none"> <li>- 8 h/day</li> <li>- only well trained personnel*</li> <li>- high laboratory and hygienic standard*</li> </ul>	laboratory PPE: gloves, goggles, coats and shoes	OPE concentration: 100%			
<b>WCS 2</b>	PROC 5: cell extraction		<ul style="list-style-type: none"> <li>- dedicated areas with limited access</li> <li>- basic general ventilation</li> </ul>	<ul style="list-style-type: none"> <li>- 8 h/day</li> <li>- only well trained personnel*</li> <li>- high laboratory and hygienic standard*</li> </ul>	laboratory PPE: gloves, goggles, coats and shoes	OPE concentration: < 1%			
<b>WCS 3</b>	PROC 5: subjection of protein raw extract to purification column		<ul style="list-style-type: none"> <li>- dedicated areas with limited access</li> <li>- basic general ventilation</li> <li>- collection of OPnEO containing solutions passing the column**</li> </ul>	<ul style="list-style-type: none"> <li>- 8 h/day</li> <li>- only well trained personnel*</li> <li>- high laboratory and hygienic standard*</li> </ul>	laboratory PPE: gloves, goggles, coats and shoes	OPE concentration: < 1%			

ECS and WCS	Task (ERC/spERC or PROC)	Annual amount per site (2021)	Technical RMMs, including:	Organisational RMMs, including:	PPE (characteristics)	Other conditions	Effectiveness of wastewater and waste air treatment (for ERC)	Release factors: water, air and soil (for ERC)	Detailed info. in CSR (section)
<b>WCS 4</b>	PROC 8a: filling of OPE-containing protein solution to containers		- dedicated areas with limited access - basic general ventilation	- 8 h/day - only well trained personnel* - high laboratory and hygienic standard*	laboratory PPE: gloves, goggles, coats and shoes	OPE concentration: < 1%			
<b>WCS 5</b>	PROC 28: Cleaning and maintenance of equipment		- dedicated areas with limited access - basic general ventilation	- 8 h/day - only well trained personnel* - high laboratory and hygienic standard*	laboratory PPE: gloves, goggles, coats and shoes	OPE concentration: < 0.01%			
<b>WCS 6</b>	PROC 15: Quality check		- dedicated areas with limited access - basic general ventilation	- 8 h/day - only well trained personnel* - high laboratory and hygienic standard*		OPE concentration: < 1%			
<b>WCS 7</b>	PROC21: collection, transport and disposal of solid waste		- dedicated areas with limited access - basic general ventilation	- 8 h/day - only well trained personnel* - high laboratory and hygienic standard*	laboratory PPE: gloves, goggles, coats and shoes				
<b>WCS 8</b>	PROC 8a, PROC 3: collection, transport and disposal of liquid waste		- dedicated areas with limited access - basic general ventilation	- 8 h/day - only well trained personnel* - high laboratory and hygienic standard*	laboratory PPE: gloves, goggles, coats and shoes				

\*All steps are performed by trained personnel and in accordance with ISO 13485 and Good Manufacturing Practices (GMP) which are part of the regulatory requirements for the design and manufacture of medical devices according to FDA 21 CFR Part 820 regulation.

\*\* OPnEO-containing solutions from protein purification or in the event of spilling are collected in single-use containers, labelled as hazardous waste and sent for incineration

**Abbreviations:** WCS=Worker contributing scenario, ECS=Environmental Contributing Scenario,\* ERC=Environmental Release Category (or spERC if available) , PROC=Process category, LEV=Local Exhaust Ventilation, PPE=Personal Protective Equipment

***Exposure Scenario (ES) 2: Use of OPE in formulation of IVD kit reagents (including additional RMM post sunset date)***

ECS and WCS	Task (ERC/spERC or PROC)	Annual amount per site (2021)	Technical RMMs, including:	Organisational RMMs, including:	PPE (characteristics)	Other conditions	Effectiveness of waste water and waste air treatment (for ERC)	Release factors: water, air and soil (for ERC)	Detailed info. in CSR (section)
<b>ECS 1</b>	ERC 2 Use of OPE in formulation of IVD kit reagents Release factor 0.5 %	#A (1-10) kg	<ul style="list-style-type: none"> <li>- dedicated areas with limited access</li> <li>- collection and segregation of OPnEO containing solutions after use**</li> <li>- solid materials potentially in contact with OPE are collected and sent for incineration</li> <li>- off-site incineration of hazardous liquid waste</li> </ul>	<ul style="list-style-type: none"> <li>- only well trained personnel*</li> <li>- losses of OPE and reagents minimised by careful rinsing and emptying of equipment (release factor 0.005 %)</li> <li>- high laboratory and hygienic standard*</li> <li>- local operating procedures on <ul style="list-style-type: none"> <li>a) cleaning accidental spills**</li> <li>b) maintenance of all equipment once per year</li> </ul> </li> </ul>			> 90 % (due to segregation and disposal as hazardous waste)	water: < 0.1 % air: no release soil: no release	9
<b>WCS 1</b>	PROC 8a, PROC 5: Weighting and mixing of IVD reagents		<ul style="list-style-type: none"> <li>- dedicated areas with limited access</li> <li>- basic general ventilation</li> </ul>	<ul style="list-style-type: none"> <li>- 8 h/day</li> <li>- only well trained personnel*</li> <li>- high laboratory and hygienic standard*</li> </ul>	laboratory PPE: gloves, goggles, coats and shoes	OPE concentration: 100%			
<b>WCS 2</b>	PROC 9: filling line for IVDs		<ul style="list-style-type: none"> <li>- dedicated filling line</li> <li>- limited access</li> <li>- basic general ventilation</li> </ul>	<ul style="list-style-type: none"> <li>- 8 h/day</li> <li>- only well trained personnel*</li> <li>- high laboratory and hygienic standard*</li> </ul>	laboratory PPE: gloves, goggles, coats and shoes	OPE concentration: < 1%			

ECS and WCS	Task (ERC/spERC or PROC)	Annual amount per site (2021)	Technical RMMs, including:	Organisational RMMs, including:	PPE (characteristics)	Other conditions	Effectiveness of waste water and waste air treatment (for ERC)	Release factors: water, air and soil (for ERC)	Detailed info. in CSR (section)
<b>WCS 3</b>	PROC 28: Cleaning and maintenance of equipment		- dedicated areas with limited access - basic general ventilation	- 8 h/day - only well trained personnel* - high laboratory and hygienic standard*	laboratory PPE: gloves, goggles, coats and shoes	OPE concentration: < 0.01%			
<b>WCS 4</b>	PROC 15: Quality check		- dedicated areas with limited access - automated platforms for IVD kits - basic general ventilation	- 8 h/day - only well trained personnel* - high laboratory and hygienic standard*		OPE concentration: < 1%			
<b>WCS 5</b>	PROC21: collection, transport and disposal of solid waste		- dedicated areas with limited access - basic general ventilation	- 8 h/day - only well trained personnel* - high laboratory and hygienic standard*	laboratory PPE: gloves, goggles, coats and shoes				
<b>WCS 6</b>	PROC 8a, PROC 3: collection, transport and disposal of liquid waste		- dedicated areas with limited access - basic general ventilation	- 8 h/day - only well trained personnel* - high laboratory and hygienic standard*	laboratory PPE: gloves, goggles, coats and shoes				

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\*\* OPnEO-containing solutions from rinsing and cleaning of the vessels or in the event of spilling are collected in single-use containers, labelled as hazardous waste and sent for incineration

**Abbreviations:** WCS=Worker contributing scenario, ECS=Environmental Contributing Scenario,\* ERC=Environmental Release Category (or spERC if available) , PROC=Process category, LEV=Local Exhaust Ventilation, PPE=Personal Protective Equipment.

***Exposure Scenario (ES) 3: Use of OPE in formulation of IVD wash solutions***

ECS and WCS	Task (ERC/spERC or PROC)	Annual amount per site (2021)	Technical RMMs, including:	Organisational RMMs, including:	PPE (characteristics)	Other conditions	Effectiveness of waste water and waste air treatment (for ERC)	Release factors: water, air and soil (for ERC)	Detailed info. in CSR (section)
<b>ECS 1</b>	ERC 2 Use of OPE in formulation of IVD wash solutions Release factor 0.5 %	#A (100 – 1000) kg	<ul style="list-style-type: none"> <li>- dedicated areas with limited access</li> <li>- collection and segregation of OPnEO containing solutions after use**</li> <li>- materials potentially in contact with OPE are collected and sent for incineration</li> <li>- off-site incineration of hazardous liquid waste</li> </ul>	<ul style="list-style-type: none"> <li>- only well trained personnel*</li> <li>- losses of OPE and reagents minimised by careful rinsing and emptying of equipment (release factor 0.005 %)</li> <li>- high laboratory and hygienic standard*</li> <li>- local operating procedures on <ul style="list-style-type: none"> <li>a) cleaning accidental spills**</li> <li>b) maintenance of all equipment once per year</li> </ul> </li> </ul>				water: < 1 % air: no release soil: no release	9
<b>WCS 1</b>	PROC 8a, PROC 5: Weighting and mixing of wash-solution		<ul style="list-style-type: none"> <li>- dedicated areas with limited access</li> <li>- basic general ventilation</li> </ul>	<ul style="list-style-type: none"> <li>- 8 h/day</li> <li>- only well trained personnel*</li> <li>- high laboratory and hygienic standard*</li> </ul>	laboratory PPE: gloves, goggles, coats and shoes	OPE concentration: 100%			
<b>WCS 2</b>	PROC 9: filling line of wash solution		<ul style="list-style-type: none"> <li>- dedicated filling line</li> <li>- limited access</li> <li>- basic general ventilation</li> </ul>	<ul style="list-style-type: none"> <li>- 8 h/day</li> <li>- only well trained personnel*</li> <li>- high laboratory and hygienic standard*</li> </ul>	laboratory PPE: gloves, goggles, coats and shoes	OPE concentration: < 0.5%			
<b>WCS 3</b>	PROC 28: Cleaning and maintenance of equipment		<ul style="list-style-type: none"> <li>- dedicated areas with limited access</li> <li>- basic general ventilation</li> </ul>	<ul style="list-style-type: none"> <li>- 8 h/day</li> <li>- only well trained personnel*</li> </ul>	laboratory PPE: gloves, goggles,	OPE concentration: < 0.01%			

ECS and WCS	Task (ERC/spERC or PROC)	Annual amount per site (2021)	Technical RMMs, including:	Organisational RMMs, including:	PPE (characteristics)	Other conditions	Effectiveness of waste water and waste air treatment (for ERC)	Release factors: water, air and soil (for ERC)	Detailed info. in CSR (section)
				- high laboratory and hygienic standard*	coats and shoes				
<b>WCS 4</b>	PROC 15: Quality check		- dedicated areas with limited access - automated platforms for IVD kits - basic general ventilation	- 8 h/day - only well trained personnel* - high laboratory and hygienic standard*		OPE concentration: < 0.5%			
<b>WCS 5</b>	PROC21: collection, transport and disposal of solid waste		- dedicated areas with limited access - basic general ventilation	- 8 h/day - only well trained personnel* - high laboratory and hygienic standard*	laboratory PPE: gloves, goggles, coats and shoes				

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