

## PART A

### 1. SUMMARY OF RISK MANAGEMENT MEASURES

Risk Management Measures (RMM) and Operational Condition (OC) are identified in the Exposure Scenarios (ES) considered in this document.

To control the exposure at the work place, the following RMM are implemented (including personal protective equipment):

## 1.1. Exposure Scenario 1

Contributing scenario	Task (ERC)	Annual amount (kg/year)	Technical RMM including: Containment, ventilation...	Organisational RMM including: frequency, monitoring, management...	Effectiveness of waste water and waste air treatment	Release factors: water, air, soil (for ERC)	Detailed information in CSR (section)
ES1	ERC 5	0.001 ton per yr	<p>During the process no release is expected except for:</p> <ul style="list-style-type: none"> <li>- Air extraction from the process and the ambient air of the clean room</li> <li>- Waste production (liquid effluents and solid wastes)</li> </ul> <p>The integrity of the process is regularly monitored.</p>	The process is carried out in cleanroom conditions	<p>Atmospheric emissions:</p> <ul style="list-style-type: none"> <li>- Air from local extraction of the process and from the clean room is collected through a closed system and specifically treated in order to remove from air all particles, including micro-particles (due to technical requirement).</li> </ul> <p>Liquid effluents:</p> <ul style="list-style-type: none"> <li>- All the liquid effluents containing hexavalent chromium on the site are collected in specific wastewater pipe. Liquid effluents are thus led to a specific treatment reducing hexavalent chromium</li> </ul> <p>Waste production:</p> <ul style="list-style-type: none"> <li>- All solid waste and excess material is transferred to waste containers and subject to the normal hazardous waste disposal process with a licensed contractors</li> </ul>	<p>No liquid effluents are released</p> <p>In the applicant estimation, the atmospheric releases are considered as low</p>	9.2.1

# CHEMICAL SAFETY REPORT

Contributing scenario	Task (PROC)	Annual amount	Technical RMM including: Containment, ventilation...	Organisational RMM including: frequency, monitoring, management...	PPE (characteristics)	Other conditions	Detailed information in CSR (section)
<b>WCS-1.2</b>	PROC 15	25g per operation	<ul style="list-style-type: none"> <li>- The operation is carried out in an enclosing hood with horizontal/downward laminar flow booth</li> <li>- A general ventilation is in place (13.8 ACH)</li> </ul>	<ul style="list-style-type: none"> <li>- The process is carried out in cleanroom conditions</li> <li>- Frequency: 3 times a year</li> <li>-</li> </ul>	<ul style="list-style-type: none"> <li>- Protective nitrile gloves and Protective clothes</li> <li>- Powered filtering device incorporating a hood (EN 12941, cat. TH3)</li> </ul>	<ul style="list-style-type: none"> <li>- Duration: 8 min per operation</li> <li>- Drop height: &lt;5cm</li> <li>- 1 operator involved</li> </ul>	9.2.2
<b>WCS-1.3</b>	PROC 15	25g per operation	<ul style="list-style-type: none"> <li>- The operation is carried out in an enclosing hood – fume cupboard</li> <li>- A general ventilation is in place (13.8 ACH)</li> <li>- Local control measure: wetting at the point of release</li> </ul>	<ul style="list-style-type: none"> <li>- The process is carried out in cleanroom conditions</li> <li>- Frequency: 3 times a year</li> </ul>	<ul style="list-style-type: none"> <li>- Protective nitrile gloves and Protective clothes</li> <li>- Powered filtering device incorporating a hood (EN 12941, cat. TH3)</li> </ul>	<ul style="list-style-type: none"> <li>- Duration: 1 min per operation</li> <li>- The height of the beaker is &lt;10cm.</li> <li>- 1 operator involved</li> </ul>	9.2.3
<b>WCS-1.4</b>	PROC 15	25g per operation	<ul style="list-style-type: none"> <li>- The operation is carried out in an enclosing hood – fume cupboard</li> <li>- A general ventilation is in place (13.8 ACH)</li> </ul>	<ul style="list-style-type: none"> <li>- The process is carried out in cleanroom conditions</li> <li>- Frequency: 3 times a year</li> <li>-</li> </ul>	<ul style="list-style-type: none"> <li>- Protective nitrile gloves and Protective clothes</li> <li>- Powered filtering device incorporating a hood (EN 12941, cat. TH3)</li> </ul>	<ul style="list-style-type: none"> <li>- Duration: &lt;1 min per operation</li> <li>- Laboratory vessel with open surface of approximately 25cm<sup>2</sup></li> <li>- 1 operator involved</li> </ul>	9.2.4
<b>WCS-1.5</b>	PROC 15	250mL at 10%	<ul style="list-style-type: none"> <li>- The operation is carried out</li> </ul>	<ul style="list-style-type: none"> <li>- The process is carried out in</li> </ul>	<ul style="list-style-type: none"> <li>- Protective</li> </ul>	<ul style="list-style-type: none"> <li>- Duration: 2 min</li> </ul>	9.2.5

# CHEMICAL SAFETY REPORT

Contributing scenario	Task (PROC)	Annual amount	Technical RMM including: Containment, ventilation...	Organisational RMM including: frequency, monitoring, management...	PPE (characteristics)	Other conditions	Detailed information in CSR (section)
		(w/w) per operation	<ul style="list-style-type: none"> <li>in an enclosing hood – fume cupboard</li> <li>- A general ventilation is in place (13.8 ACH)</li> </ul>	<ul style="list-style-type: none"> <li>cleanroom conditions</li> <li>- Frequency: 3 times a year</li> </ul>	<ul style="list-style-type: none"> <li>nitrile gloves and Protective clothes</li> <li>- Powered filtering device incorporating a hood (EN 12941, cat. TH3)</li> </ul>	<ul style="list-style-type: none"> <li>per operation</li> <li>- Transfer, low of transfer: 0.25L transferred in 2 min</li> <li>- 1 operator involved</li> </ul>	
<b>WCS-1.6</b>	PROC 15	10mL at 10% (w/w) per operation	<ul style="list-style-type: none"> <li>- The operation is carried out in an enclosing hood with horizontal/downward laminar flow booth</li> <li>- A general ventilation is in place (13.8 ACH)</li> </ul>	<ul style="list-style-type: none"> <li>- The process is carried out in cleanroom conditions</li> <li>- Frequency: once a week</li> </ul>	<ul style="list-style-type: none"> <li>- Protective nitrile gloves and Protective clothes</li> <li>- Powered filtering device incorporating a hood (EN 12941, cat. TH3)</li> </ul>	<ul style="list-style-type: none"> <li>- Duration: 2 min per operation</li> <li>- Transfer, flow of transfer: 10mL transferred in 2 minutes</li> <li>- 1 operator involved</li> </ul>	9.2.6
<b>WCS-1.7</b>	PROC 15	250ml at 0.4% (w/w) per operation	<ul style="list-style-type: none"> <li>- The operation is carried out in an enclosing hood with horizontal laminar flow booth</li> <li>- A general ventilation is in place (13.8 ACH)</li> </ul>	<ul style="list-style-type: none"> <li>- The process is carried out in cleanroom conditions</li> <li>- Frequency: once a week</li> </ul>	<ul style="list-style-type: none"> <li>- Protective nitrile gloves and Protective clothes</li> <li>- Powered filtering device incorporating a hood (EN 12941, cat. TH3)</li> </ul>	<ul style="list-style-type: none"> <li>- Duration: &lt;1min per operation</li> <li>- Activity: stirring of a solution</li> <li>- 1 operator involved</li> </ul>	9.2.7
<b>WCS-1.8</b>	PROC 15	250mL at 0.4%(w/w) per operation	<ul style="list-style-type: none"> <li>- A general ventilation is in place (13.8 ACH)</li> </ul>	<ul style="list-style-type: none"> <li>- The process is carried out in cleanroom conditions</li> </ul>	<ul style="list-style-type: none"> <li>- Protective nitrile gloves and Protective</li> </ul>	<ul style="list-style-type: none"> <li>- Duration: 5min per operation</li> </ul>	9.2.8

# CHEMICAL SAFETY REPORT

Contributing scenario	Task (PROC)	Annual amount	Technical RMM including: Containment, ventilation...	Organisational RMM including: frequency, monitoring, management...	PPE (characteristics)	Other conditions	Detailed information in CSR (section)
				<ul style="list-style-type: none"> <li>- Frequency: once a week</li> </ul>	<ul style="list-style-type: none"> <li>clothes</li> <li>- Powered filtering device incorporating a hood (EN 12941, cat. TH3)</li> </ul>	<ul style="list-style-type: none"> <li>- Transfer, flow of transfer: 250mL transferred in 2 minutes</li> <li>- 1 operator involved</li> </ul>	
<b>WCS-1.9</b>	PROC 15	250 ml at 0.4% (w/w) per operation	<ul style="list-style-type: none"> <li>- The operation is carried out in an enclosing hood with horizontal laminar flow booth</li> <li>- A general ventilation is in place (13.8 ACH)</li> </ul>	<ul style="list-style-type: none"> <li>- The process is carried out in cleanroom conditions</li> <li>- Frequency: once a week</li> </ul>	<ul style="list-style-type: none"> <li>- Protective nitrile gloves and Protective clothes</li> <li>- Powered filtering device incorporating a hood (EN 12941, cat. TH3)</li> </ul>	<ul style="list-style-type: none"> <li>- Duration: 6min per operation</li> <li>- Transfer, flow of transfer: 0.25L transferred in 6 minutes</li> <li>- 1 operator involved</li> </ul>	9.2.9
<b>WCS-1.10</b>	PROC 15	50 mL per operation at 0.4% (w/w)	<ul style="list-style-type: none"> <li>- A general ventilation is in place (13.8 ACH)</li> <li>- Very low level of containment (casting plate)</li> </ul>	<ul style="list-style-type: none"> <li>- The process is carried out in cleanroom conditions</li> <li>- Frequency: 2 to 3 times a week</li> </ul>	<ul style="list-style-type: none"> <li>- Protective nitrile gloves and Protective clothes</li> <li>- Powered filtering device incorporating a hood (EN 12941, cat. TH3)</li> </ul>	<ul style="list-style-type: none"> <li>- Duration: 20min per operation</li> <li>- Transfer with a syringe, flow of transfer: 0.05L transferred in 20 minutes</li> <li>- 1 operator involved</li> </ul>	9.2.10

## 1.2. Exposure Scenario 2

Contributing scenario	Task (ERC)	Annual amount	Technical RMM including: Containment, ventilation...	Organisational RMM including: frequency, monitoring, management...	Effectiveness of waste water and waste air treatment	Release factors: water, air, soil (for ERC)	Detailed informations in CSR (section)
<b>ES2</b>	ERC 5	0.005 ton per yr	<p>During the process no release is expected except for:</p> <ul style="list-style-type: none"> <li>- Air extraction from the process and the ambient air of the clean room</li> <li>- Waste production (liquid effluents and solid wastes)</li> </ul> <p>The integrity of the process is regularly monitored.</p>	The process is carried out in cleanroom conditions	<p>Atmospheric emissions:</p> <ul style="list-style-type: none"> <li>- Air from local extraction of the process and from the clean room is collected through a closed system and specifically treated in order to remove from air all particles, including micro-particles (due to technical requirement).</li> </ul> <p>Liquid effluents:</p> <ul style="list-style-type: none"> <li>- All the liquid effluents containing hexavalent chromium on the site are collected in specific wastewater pipe. Liquid effluents are thus led to a specific treatment reducing hexavalent chromium</li> </ul> <p>Waste production:</p> <ul style="list-style-type: none"> <li>- All solid waste and excess material is transferred to waste containers and subject to the normal hazardous waste disposal process with a licensed contractors</li> </ul>	<p>No liquid effluents are released</p> <p>In the applicant estimation, the atmospheric releases are considered as low</p>	9.2.1

# CHEMICAL SAFETY REPORT

Contributing scenario	Task (PROC)	Annual amount	Technical RMM including: Containment, ventilation...	Organisational RMM including: frequency, monitoring, management...	PPE (characteristics)	Other conditions	Detailed informations in CSR (section)
<b>WCS-2.2</b>	PROC 15	12g/operation	<ul style="list-style-type: none"> <li>- A general ventilation is in place (25 ACH)</li> </ul>	<ul style="list-style-type: none"> <li>- The process is carried out in cleanroom conditions</li> <li>- Frequency: 10 times per week maximum</li> </ul>	<ul style="list-style-type: none"> <li>- Protective nitrile gloves and Protective clothes</li> </ul>	<ul style="list-style-type: none"> <li>- 2min per operation</li> <li>- Operation: weighing in laboratory (flow rate: &lt;10g/min)</li> <li>- Drop height: &lt;3cm</li> <li>- 1 operator concerned by operation; 4 operators involved</li> </ul>	9.2.2
<b>WCS-2.3</b>	PROC 15	12g/operation	<ul style="list-style-type: none"> <li>- A general ventilation is in place (35 ACH)</li> <li>- Local control measure: wetting at the point of release</li> </ul>	<ul style="list-style-type: none"> <li>- The process is carried out in cleanroom conditions</li> <li>- Frequency: 10 times per week maximum</li> </ul>	<ul style="list-style-type: none"> <li>- Protective nitrile gloves and Protective clothes</li> </ul>	<ul style="list-style-type: none"> <li>- 1min per operation</li> <li>- Transfer of powder to a beaker: 12g transferred in 1 minute</li> <li>- Drop height: &lt;10cm</li> <li>- 1 operator concerned by operation; 4 operators involved</li> </ul>	9.2.3
<b>WCS-2.4</b>	PROC 15	12g/operation	<ul style="list-style-type: none"> <li>- A general ventilation is in place (35 ACH)</li> </ul>	<ul style="list-style-type: none"> <li>- The process is carried out in cleanroom conditions</li> <li>- Frequency: 10 times per week maximum</li> </ul>	<ul style="list-style-type: none"> <li>- Protective nitrile gloves and Protective clothes</li> </ul>	<ul style="list-style-type: none"> <li>- &lt;5min per operation</li> <li>- Operation: gentle stirring of a solution containing</li> </ul>	9.2.4

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Contributing scenario	Task (PROC)	Annual amount	Technical RMM including: Containment, ventilation...	Organisational RMM including: frequency, monitoring, management...	PPE (characteristics)	Other conditions	Detailed informations in CSR (section)
						chemicals in crystals form in a beaker for dissolution - 1 operator concerned by operation; 4 operators involved	
<b>WCS-2.5</b>	PROC 15	12g/operation	<ul style="list-style-type: none"> <li>- A general ventilation is in place (35 ACH)</li> <li>- The operation is carried out with a fixed capturing hood (lip-extracted processing bath)</li> </ul>	<ul style="list-style-type: none"> <li>- The process is carried out in cleanroom conditions</li> <li>- Frequency: 10 times per week maximum</li> </ul>	<ul style="list-style-type: none"> <li>- Protective nitrile gloves and Protective clothes</li> </ul>	<ul style="list-style-type: none"> <li>- 3 min per operation</li> <li>- Operation: transfer of solution in the bath</li> <li>- 4L transferred in 2 to 3min</li> <li>- 1 operator concerned by operation; 4 operators involved</li> </ul>	9.2.5
<b>WCS-2.6</b>	PROC 15	12g/operation	<ul style="list-style-type: none"> <li>- A general ventilation is in place (35 ACH)</li> <li>- The operation is carried out with a fixed capturing hood</li> </ul>	<ul style="list-style-type: none"> <li>- The process is carried out in cleanroom conditions</li> <li>- Frequency: 32 times per day maximum</li> </ul>	<ul style="list-style-type: none"> <li>- Protective nitrile gloves and Protective clothes</li> </ul>	<ul style="list-style-type: none"> <li>- 15min per operation</li> <li>- Operation: Immersion/dipping into the bath</li> <li>- Open surface: approx. 1064cm<sup>2</sup></li> <li>- 1 operator concerned by operation; 4 operators involved</li> </ul>	9.2.6



# CHEMICAL SAFETY REPORT

Contributing scenario	Task (PROC)	Annual amount	Technical RMM including: Containment, ventilation...	Organisational RMM including: frequency, monitoring, management...	PPE (characteristics)	Other conditions	Detailed informations in CSR (section)
<b>WCS-2.7</b>	PROC 15	<12g/operation	<ul style="list-style-type: none"> <li>- A general ventilation is in place (35 ACH)</li> <li>- The operation is carried out with a fixed capturing hood</li> </ul>	<ul style="list-style-type: none"> <li>- The process is carried out in cleanroom conditions</li> <li>- Frequency: 10 times per week maximum</li> </ul>	<ul style="list-style-type: none"> <li>- Protective nitrile gloves and Protective clothes</li> </ul>	<ul style="list-style-type: none"> <li>- 2min per operation</li> <li>- Operation: Transfer of solution in the drain</li> <li>- Flow rate: 4L transferred during 3 to 4 min</li> <li>- 1 operator concerned by operation; 4 operators involved</li> </ul>	9.2.7