

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

Public version

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<b>Substance:</b>	Chromium trioxide CAS No: 1333-82-0 EC No: 215-607-8
<b>Use title:</b>	Formulation of chromium trioxide-based electrolyte for electroplating process
<b>Use number:</b>	1

**February 2021**

**Formulation of chromium trioxide-based electrolyte for electroplating process**

ECS and WCS	Task (ERC/spERC or PROC)	Annual amount per site (tonnes /year)	Technical RMMs, including:	Organisational RMMs, including:	PPE	Other conditions	Effective-ness 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: Formulation of chromium trioxide-based electrolyte	160 – 220 t CrO <sub>3</sub> / year	<p>Any releases to the aquatic environment are very low and often non-detectable. Wastewater from the process is passed through an onsite wastewater treatment plant, where Cr(VI) is reduced to Cr(III) and precipitated. Wastewater is discharged batch-wise into the sewage system.</p> <p>Exhaust air is led to a chrome scrubber according to best available technique before being released to atmosphere. Water from the chrome scrubber is led to the on-site wastewater treatment plant.</p>				Negligible release to wastewater	<p>Water: 4.72E-05%</p> <p>Air: <span style="background-color: black; color: black;">          </span>%</p> <p>Soil: 0%</p>	9.1.4, 9.2.2.

<b>WCS 1</b>	PROC 1: Delivery and storage of solid CrO <sub>3</sub>		General ventilation: mechanical ventilation (>1 ACH)  Containment: Closed system (minimal contact during routine operations)	Duration of activity: 2.0 hours  Frequency of activity: 1-2 times/week  Occupational Health and Safety Management System: ISO14001 / ISO45001 (formerly OHSAS18001) / ISO9001	Safety footwear  Protective clothing	Concentration of CrVI: 52 %  Place of use: Outdoor (Delivery) & Indoor (Storage)  Temperature: ambient			9.2.3.
<b>WCS 2</b>	PROC 3: Preparation of the CrO <sub>3</sub> containing formulation		General ventilation: mechanical ventilation (>1 ACH)  Fixed capturing hoods and/or moveable LEV hoses (90% reduction)  Containment: Open process	Duration of activity: 3.0 – 4.0 h  Frequency of activity: daily  Occupational Health and Safety Management System: ISO14001 / ISO45001 (formerly OHSAS18001) / ISO9001	Safety footwear  Protective clothing  Face protection  Chemical resistant gloves  RPE: dust safety mask (FFP3 with APF 30)	Concentration of CrVI: Solid: ≤ 52 % Liquid: Substantial (10 – 50 %)  Place of use: Indoors  Process temperature: Room temperature			9.2.4.
<b>WCS 3</b>	PROC 8b: Sampling		General ventilation: mechanical ventilation (>1 ACH)  No localized controls (0.0 % reduction)  Containment: Open process	Duration of activity: 15 min <sup>1)</sup>  Frequency of activity: 2 times/week <sup>1)</sup>  Occupational Health and Safety Management System: ISO14001 / ISO45001 (formerly OHSAS18001) / ISO9001	Safety footwear  Protective clothing  Face protection  Chemical resistant gloves	Concentration of CrVI: ≤ 34 %  Place of use: Indoors  Process temperature: Room temperature			9.2.5.

<b>WCS 4.1</b>	PROC 28: Maintenance (Rinsing of scrubber)		General ventilation: mechanical ventilation (>1 ACH)  No localized controls (0.0 % reduction)  Containment: Open process	Duration of activity: 15 min  Frequency of activity: 2.0 times/week  Occupational Health and Safety Management System: ISO14001 / ISO45001 (formerly OHSAS18001) / ISO9001	Safety footwear  Protective clothing  Face protection  Chemical resistant gloves  RPE: dust safety mask (FFP3 with APF 30)	Concentration of CrVI: Small (1 to 5 %)  Place of use: Indoors  Process temperature: Room temperature			9.2.6.
<b>WCS 4.2</b>	PROC 28: Maintenance (Sampling)		General ventilation: mechanical ventilation (>1 ACH)  No localized controls (0.0 % reduction)  Containment: Open process	Duration of activity: 15 min  Frequency of activity: 3.0 times/week  Occupational Health and Safety Management System: ISO14001 / ISO45001 (formerly OHSAS18001) / ISO9001	Safety footwear  Protective clothing  Face protection  Chemical resistant gloves	Concentration of CrVI: Small (1 to 5 %)  Place of use: Indoors  Process temperature: Room temperature			9.2.6.
<b>WCS 5</b>	PROC 8b: Wastewater sampling and waste management (solid and liquid)		General ventilation: mechanical ventilation (>1 ACH)  No localized controls (0.0 % reduction)  Containment: Open process	Duration of activity: 15 min <sup>2)</sup>  Frequency of activity: daily <sup>2)</sup>  Occupational Health and Safety Management System: ISO14001 / ISO45001 (formerly OHSAS18001) / ISO9001	Safety footwear  Protective clothing  Face protection  Chemical resistant gloves	Concentration of CrVI: Minute (0.01 to 0.1 %)  Place of use: Indoors  Process temperature: Room temperature			9.2.7.

**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, RPE=Respiratory Protective Equipment; APF=Assigned Protection Factor

<sup>1)</sup> Corrigendum according to RAC questions: The duration and the frequency of the task are 5 minutes per day. It is assumed that the originally derived exposure and risk values are representative of the tasks.

<sup>2)</sup> Corrigendum according to RAC questions: The frequency of the task is twice per week. It is assumed that the originally derived exposure and risk values are representative of the tasks.