

**Exposure Scenario (ES) for Use 1: "Slurry coating using chromium trioxide in aerospace and defence industry and its supply chains"**

ECS and WCS	Task (ERC/ spERC or PROC)	Annual amount per site (kg Cr(VI)/ year)	Technical RMMs, including: *Containment, *Ventilation (general, LEV...) *customized technical installation, etc	Organisational RMMs, including: *Duration and Frequency of exposure *OSH management system *Supervision *Monitoring arrangements *Training, etc	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 5	0.1 - 35	<p><b>Air</b></p> <ul style="list-style-type: none"> <li>- Exhaust air treated by wash water (water curtains), wet scrubbers, or air filters</li> </ul> <p><b>Wastewater</b></p> <ul style="list-style-type: none"> <li>- Sites either gather wastewater in closed containers sent to a certified external company</li> <li>- or treated onsite in a reduction facility (reduced wastewater sent to external STP or WWTP)</li> </ul> <p><b>Soil:</b></p> <ul style="list-style-type: none"> <li>- Indoor and outdoor surfaces where chemicals are handled are sealed</li> </ul> <p><b>Waste:</b></p> <ul style="list-style-type: none"> <li>- Solid Cr(VI) waste collected and forwarded to certified external company</li> </ul>	<ul style="list-style-type: none"> <li>- Up to 365 days/year</li> <li>- Emissions to air and water monitored regularly</li> </ul>	n.a.	<p><b>Air:</b></p> <ul style="list-style-type: none"> <li>- Surface treatment at RT</li> </ul> <p><b>Water:</b></p> <ul style="list-style-type: none"> <li>- STP removal rate: 50% to sludge assumed</li> </ul>	n.a.	<p><b>Air:</b></p> <p>0.000206 - 0.715 kg/a <sup>a</sup></p> <p><b>Water:</b></p> <p>0 - 0.155 kg/a</p> <p><b>Soil:</b></p> <p>0 kg/a (no release to soil)</p>	9.2.3.1
<b>WCS 1 - Spray operators</b>	PROC 5, PROC 7, PROC 8a, PROC 8b, PROC 9, PROC 10, PROC 28	n.a.	<ul style="list-style-type: none"> <li>- Surface treatment by manual spraying (Task 1): in spray booth with LEV</li> <li>- Surface treatment by automated spraying (Task 2): high level of containment, with LEV</li> </ul>	<ul style="list-style-type: none"> <li>- Duration and frequency task-dependent</li> <li>- Duration: 10 - 240 min/task/shift</li> </ul>	<ul style="list-style-type: none"> <li>- Gloves <sup>b</sup> (not while automated spraying by robot)</li> <li>- RPE <sup>c</sup></li> </ul>	<ul style="list-style-type: none"> <li>- &lt;3.1% Cr(VI)</li> <li>- Indoors</li> <li>- RT</li> </ul>	n.a.	n.a.	9.2.3.2

			<ul style="list-style-type: none"> <li>- Surface treatment by brushing (Task 3): with LEV</li> <li>- Stirring paint, loading/unloading spray gun, and decanting of product (Task 4): with LEV</li> <li>- Cleaning of equipment and workplace (Task 5): with LEV</li> <li>- Ventilation rate: &gt; 10 ACH (Task 1 - 2, Task 5 inside spray booth)</li> <li>- Natural ventilation (outside spray booth)</li> </ul>	<ul style="list-style-type: none"> <li>- Frequency: &lt;1 – 240 days/task/year</li> <li>Advanced occupational health and safety management system: <ul style="list-style-type: none"> <li>- Regular exposure monitoring</li> <li>- Workers' training</li> <li>- Instructions available at workplaces</li> <li>- PPE management system</li> <li>- Chemical products stored in designated area</li> <li>- Inspection and maintenance of LEV</li> <li>- Access control to paint area where slurry coating products are handled</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>- Eye protection</li> <li>- chemical protective clothing or coverall, for manual/automated spraying coverall obligatory</li> </ul>				
<b>WCS 2</b> - Maintenance and/or cleaning workers	PROC 28	n.a.	<ul style="list-style-type: none"> <li>- Cleaning of spray booth: with LEV</li> <li>- For cleaning spray booth, ventilation rate: &gt; 10 ACH</li> <li>- Natural ventilation</li> </ul>	<ul style="list-style-type: none"> <li>- Duration and frequency task-dependent</li> <li>- Duration and frequency of task: variable (480 min/up to 4 times/year or 160 min/up to 12 times/year or 30 min/up to 52 times/year)</li> <li>Advanced occupational health and safety management system: <ul style="list-style-type: none"> <li>- Regular exposure monitoring</li> <li>- Workers' training</li> <li>- Instructions available at workplaces</li> <li>- PPE management system</li> <li>- Chemical products stored in designated area</li> <li>- Inspection and maintenance of LEV</li> <li>- Access control to paint area where slurry coating products are handled</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>- Gloves <sup>b</sup></li> <li>- RPE <sup>d</sup></li> <li>- Eye protection</li> <li>- chemical protective clothing</li> </ul>	<ul style="list-style-type: none"> <li>- &lt;3.1% Cr(VI)</li> <li>- Indoors</li> <li>- RT</li> </ul>	n.a.	n.a.	9.2.3.3
<b>WCS 3</b> - Incidentally exposed workers	PROC 0	n.a.	<ul style="list-style-type: none"> <li>- For quality control: local LEV arms</li> <li>- Natural ventilation</li> </ul>	<ul style="list-style-type: none"> <li>- Duration: up to 480 min/shift</li> <li>- Frequency: 240 days/year</li> </ul>	<ul style="list-style-type: none"> <li>- Standard PPE</li> </ul>	<ul style="list-style-type: none"> <li>- &lt;3.1% Cr(VI)</li> <li>- Indoors</li> </ul>	n.a.	n.a.	9.2.3.4

				Advanced occupational health and safety management system: - Workers' training - Instructions available at workplaces - PPE management system - Access control to paint area where slurry coating products are handled		- RT			
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**Notes:**

<sup>a</sup> Total release per site of sites performing this use, with only a certain share generated by this use.

<sup>b</sup> Gloves (tested to EN374), material and thickness depending on task, see WCS 1 - 2.

<sup>c</sup> RPE according to EN 529:2005 is obligatory for Task 1, Task 4 (except semi-automatic filling), and Task 5 (except for cleaning equipment/spray gun in closed system) and for all tasks not performed under LEV for which industrial hygiene exposure assessment confirms RPE use is required: Full mask with P3 filter/P3 combination filter or powered filtering device incorporating a hood, helmet or full mask, or fresh air hose breathing apparatus - full mask, hood or helmet.

<sup>d</sup> RPE according to EN 529:2005 is worn during all tasks not performed under a LEV for which industrial hygiene exposure assessment confirms RPE use is required: Half mask FFP3, half mask with P3 filter/P3 combination filter or full mask with P3 filter/P3 combination filter

**Abbreviations:** WCS=Worker contributing scenario, ECS=Environmental Contributing Scenario, ERC=Environmental Release Category, STP=Sewage Treatment Plant, WWTP=Wastewater Treatment Plant, PROC=Process category, LEV=Local Exhaust Ventilation, PPE=Personal Protective Equipment, RPE=Respiratory Protective Equipment, RT=Room temperature, n.a.=not applicable