

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

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

^a Total release per site of sites performing this use, with only a certain share generated by this use.

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

^c 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.

^d 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