

Exposure Scenario (ES) for Use 1: "Formulation of mixtures with soluble Cr(VI) compounds for use in aerospace and defence industry and its supply chains for surface treatments"

ECS and WCS	Task (ERC/ spERC or PROC)	Total amount used in EEA (tonnes 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	Effective-ness 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 2	- Up to 310 t/a as CT - Up to 40 t/a as SD - Up to 15 t/a as PD - Up to 0.35 t/a as SC	Air: -Mixing vessels equipped with LEV -Air abatement by wet scrubbers or air filters Wastewater: -either sent to certified external company for disposal (with or without prior recycling and evaporation) -or treated onsite by reduction (reduced wastewater sent to external STP or WWTP) Soil: - Indoor and outdoor surfaces where chemicals are handled are sealed - Mixing vessels and tanks are surrounded by secondary containment pits Waste: - solid Cr(VI) waste collected and disposed as hazardous waste by certified external company	- Up to 365 days/year - Emissions to air and water monitored regularly	n.a.	Air: - All processes at ambient temperatures Water: - STP removal rate: 50% to sludge assumed	n.a.	Air: 0.0012 – 0.056 kg/a Water: 0 – 0.32 kg/a Soil: 0 kg/a	9.2.3.1
WCS 1 - Operators producing liquid mixtures	PROC 5, PROC 8a, PROC 8b, PROC 9, PROC 28	n.a.	- Mixing vessels and transfer of liquid products: with LEV - Natural ventilation	Duration and frequency task-dependent - Frequency: 10 to 400 batches/a, 1 – 2 batches/shift	- Gloves ^a - RPE for handling solid chromates ^b	- Up to 52% Cr(VI) - Indoors	n.a.	n.a.	9.2.3.2

				<p>Advanced occupational health and safety management system:</p> <ul style="list-style-type: none"> - Regular exposure monitoring - Workers' training - Instructions available at workplaces - Restricted access to areas where solid SC is handled - Standard procedures to minimize dust generation - PPE management system - Inspection and maintenance of LEV 	<ul style="list-style-type: none"> - Chemical protective clothes - Eye protection 	<ul style="list-style-type: none"> - Room temperature 			
WCS 2 - Operators producing solid mixtures	PROC 5, PROC 8a, PROC 8b, PROC 9, PROC 28		<ul style="list-style-type: none"> - Mixing vessels and transfer of liquid products: with LEV - Natural ventilation 	<p>Duration and frequency task-dependent</p> <ul style="list-style-type: none"> - Frequency: approx. 160 batches/a, 1 – 4 batches/shift <p>Advanced occupational health and safety management system:</p> <ul style="list-style-type: none"> - Regular exposure monitoring - Workers' training - Instructions available at workplaces - Restricted access to areas where solid SC is handled - Standard procedures to minimize dust generation - PPE management system - Inspection and maintenance of LEV 	<ul style="list-style-type: none"> - Gloves ^a - RPE for handling solid chromates ^b - Chemical protective clothes - Eye protection 	<ul style="list-style-type: none"> - Up to 52% Cr(VI) - Indoors - Room temperature 	n.a.	n.a.	9.2.3.3
WCS 3 - Laboratory technicians	PROC 15	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	9.2.3.4
WCS 4 - Maintenance workers	PROC 28	n.a.	<ul style="list-style-type: none"> - Natural ventilation 	<ul style="list-style-type: none"> - Duration: 30 – 120 min - Frequency: 48x per year <p>Advanced occupational health and safety management system:</p> <ul style="list-style-type: none"> - Workers' training - Instructions available at workplaces - PPE management system 	<ul style="list-style-type: none"> - Gloves ^a - Chemical protective clothes - Eye protection 	<ul style="list-style-type: none"> - Up to 26% Cr(VI) - Indoors - Room temperature 	n.a.	n.a.	9.2.3.5

WCS 5 – Logistics operators (tank truck loading)	PROC 8b	n.a.	- Natural ventilation	- Duration: 120 min - Frequency: up to 36 days per year Advanced occupational health and safety management system: - Transfer via semi-closed lines - Workers' training - Instructions available at workplaces - PPE management system	- Gloves ^a - Chemical protective clothes - Eye protection	- Up to 26% Cr(VI) - Outdoors - Ambient temperature	n.a.	n.a.	9.2.3.6
WCS 6 – Incidentally exposed workers	PROC 0	n.a.	- Natural ventilation	- Duration: up to 480 min/shift - Frequency: 240 days/year Advanced occupational health and safety management system: - Workers' training - Instructions available at workplaces - PPE management system	- Standard PPE	- Up to 26% Cr(VI) - Outdoors - Room temperature	n.a.	n.a.	9.2.3.7

Notes:

^a Gloves (tested to EN374), material and thickness depending on task, see WCS 1- 6.

^b RPE: RPE according to EN 529:2005 is worn during all tasks involving solid chromates (WCS 1: Tasks 1, 2 and 7; WCS 2: Tasks 1-3, 5, 6): Full mask with P3 filter or P3 combination filter or powered filtering device incorporating a hood, helmet or a full mask

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