Exposure Scenario (ES) for Use 1: **"Passivation of (non-Al) metallic coatings using chromium trioxide or sodium dichromate or potassium dichromate 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 (characte-ristics)**	**Other conditions**	**Effective-ness of waste water and waste air treat-ment (for ERC)**	**Release factors: water, air and soil (for ERC)**	**Detailed info. in CSR (section)**
ECS 1	ERC 5	0.2 – 480	**Air:** - Chemical treatment baths equipped with LEV - Air abatement by wet scrubbers or air filters [a] **Wastewater:** - Either sent to certified company for disposal (with or without prior recycling and evaporation) of liquid hazardous waste, - or recycled after evaporation and/or treated onsite by reduction (reduced wastewater sent to external STP or WWTP) **Soil:** - Indoor and outdoor surfaces where chemicals are handled are sealed - Tanks are surrounded by secondary containment pits **Waste:** - Solid Cr(VI) waste collected and forwarded to certified external company	- Up to 365 days/year - Emissions to air and water monitored regularly	n.a.	**Air:** - Process temperature of treatment baths: (10 - 70°C) **Water:** - STP removal rate: 50% to sludge assumed	n.a.	**Air:** 0.0192 – 43.1 kg/a [b] **Water:** 0 - 1.42 kg/a [b] **Soil:** 0 kg/a (no release to soil)	Section 9.2.3.1

WCS 1 - Line operators	PROC 9, PROC 10, PROC 13, PROC 28	n.a.	- Surface treatment by dipping/immersion, sampling of treatment baths and touch-up: with LEV - Natural ventilation	- Duration and frequency task-dependent - Duration: <1 – 120 min/task/ shift (less for automated lines; 1x/month cleaning of up to 180 min is required) - Frequency: 12 – 240 days/task/ year Advanced occupational health and safety management system: - Regular exposure monitoring - Workers' training - Instructions available at workplaces - PPE management system - Chemical products stored in designated area - Effective cleaning practices implemented to prevent surface contamination in vicinity of tanks - Inspection and maintenance of LEV	- Gloves [c] - RPE [d] - Eye protection - Chemical protective clothing, for cleaning with hose apron and waterproof boots	- Up to 8% Cr(VI) - Indoors - 10 – 70°C	n.a.	n.a.	9.2.3.2
WCS 2 - Storage area workers	PROC 5, PROC 8b, PROC 28	n.a.	- Bath make-up or addition: with LEV - Natural ventilation	- Duration and frequency task-dependent - Duration: <1 – 60 min/task/shift - Frequency: <1 – 240 days/task/ year Advanced occupational health and safety management system: - Regular exposure monitoring - Workers' training - Instructions available at workplaces - PPE management system - Chemical products stored in designated area	- Gloves [c] - RPE is used for measuring and weighing of solids and for bath emptying and cleaning [d] - Eye protection - Chemical protective clothing, for cleaning with hose apron and waterproof boots	- Up to 52% Cr(VI) - Indoors - RT – 45°C	n.a.	n.a.	9.2.3.3

				- Effective cleaning practices implemented to prevent surface contamination in vicinity of tanks - Inspection and maintenance of LEV					
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 and/or cleaning workers	PROC 28	n.a.	- Natural ventilation	- Duration: up to 240 min/shift (at some sites, specific maintenance activities are performed for 480 min once per year) - Frequency: 48 days/year Advanced occupational health and safety management system: - Regular exposure monitoring - Workers' training - Instructions available at workplaces - PPE management system - Effective cleaning practices implemented to prevent surface contamination in vicinity of tanks	- Gloves [c] - RPE [d] - Eye protection - Chemical protective clothing	- Up to 8% Cr(VI) - Indoors - RT	n.a.	n.a.	9.2.3.5
WCS 5 - Machinists	PROC 21,24	n.a.	- Natural ventilation	- Duration: 10 – 90 min/shift (at few sites infrequent long-term activities of up to 600 min/ shift on 2 days per year) - Frequency: 240 days/year Advanced occupational health and safety management system: - Regular exposure monitoring - Workers' training - Instructions available at workplaces - PPE management system - Effective cleaning practices implemented to prevent surface contamination in vicinity of tanks	- RPE [d] - Eye protection - Protective suit	- Indoors - RT	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 - Effective cleaning practices implemented to prevent surface contamination in vicinity of tanks	- Standard PPE	- Up to 8% Cr(VI) - Indoors - RT	n.a.	n.a.	9.2.3.7

Notes:
[a] For operations where exposure potential is low (i.e. operations are infrequent using only small quantities of Cr(VI)), air emission abatement may not be required.
[b] Total release per site of sites performing this use, with only a certain share generated by this use.
[c] Gloves (tested to EN374), material and thickness depending on task, see WCS 1 - 4.
[d] RPE according to EN 529:2005 is worn during all tasks involving solid chromates (measuring and weighing of solids and for bath emptying and cleaning) and for all tasks not performed under 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