

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

Legal name of applicant(s):	<i>REACHLaw Ltd as Only Representative on behalf of Joint Stock Company “Novotroitsk Plant of Chromium Compounds”</i>
Prepared by:	<i>CTAC Consortium</i>
Substance:	<i>Chromium trioxide, EC No: 215-607-8, CAS No: 1333-82-0</i>
Use title:	<i>Surface treatment (except ETP) for applications in various industry sectors namely architectural, automotive, metal manufacturing and finishing, and general engineering</i>
Use number:	<i>4</i>

Other Surface treatment: Surface treatment (except ETP) for applications in various industry sectors namely architectural, automotive, metal manufacturing and finishing, and general engineering

ECS and WCS	Task (ERC/spERC or PROC)	Annual amount per site (tonnes/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 (page)
ECS 1	ERC 6b: Other surface treatment	20 CrO3	<p>All solid and any liquid waste is collected. The collected waste is either directly forwarded to an external licensed waste management company for disposal, or Cr(VI) in wastewater is treated on-site by reduction to Cr(III) or by vacuum evaporation. In the case of on-site treatment, the treated waste is either recycled or forwarded to an external licensed waste management company for disposal.</p> <p>Exhaust air is passed through filters or wet scrubbers according to best available technique before being released to atmosphere^s</p>				<p>Negligible release to waste water</p> <p>Air emission abatement: at least 99% efficiency^s</p>	<p>Water: Negligible</p> <p>Air: 1.0E-05^{ss}</p> <p>Soil: 0 (no release to soil)</p>	19-28

WCS 1	PROC 1: Delivery and storage of raw material		General ventilation: Basic (1-3 ACH per hour) Containment: Closed system (sealed steel drums or sealed containers)	Duration of activity: < 8 hours Occupational Health and Safety Management System: Advanced		Concentration of CrO3: < 100% Place of use: Indoor			28
WCS 2	PROC 8b: Decanting of liquids		General ventilation: Good natural ventilation Medium level containment <i>"The material transfer is enclosed with the receiving vessel being docked or sealed to the source vessel"</i> Advanced REACH Tool (ART) version 1.5	Duration of activity: < 1 hour Occupational Health and Safety Management System: Advanced	PPE*	Concentration of CrO3: < 100% Place of use: Indoor			29/30
WCS 3	PROC 8b: Decanting and weighing of solids		General ventilation: Good natural ventilation	Duration of activity: < 1 hour Occupational Health and Safety Management System: Advanced	PPE RPE**: Yes (with APF 30)	Concentration of CrO3: < 100% Place of use: Indoor			30/31
WCS 4	PROC 5: Mixing - liquids		General ventilation: Good natural ventilation Low level containment <i>"Physical containment or enclosure of the source of emission. The air within the enclosure is not actively ventilated or extracted. The enclosure is not opened during the activity."</i> Advanced REACH Tool (ART) version 1.5	Duration of activity: < 1 hour Occupational Health and Safety Management System: Advanced	PPE	Concentration of CrO3: < 100% Place of use: Indoor			32

WCS 5	PROC 5: Mixing - solids		General ventilation: Good natural ventilation Low level containment <i>"Physical containment or enclosure of the source of emission. The air within the enclosure is not actively ventilated or extracted. The enclosure is not opened during the activity."</i> Advanced REACH Tool (ART) version 1.5	Duration of activity: < 1 hour Occupational Health and Safety Management System: Advanced	PPE RPE: Yes (with APF 30)	Concentration of CrO3: < 100% Place of use: Indoor			33/34
WCS 6	PROC 8b: Re-filling of baths-liquids		General ventilation: Good natural ventilation Local exhaust ventilation	Duration of activity: < 10 min Occupational Health and Safety Management System: Advanced	PPE	Concentration of CrO3: < 100% Place of use: Indoor			35
WCS 7	PROC 8b: Re-filling of baths - solids		General ventilation: Good natural ventilation Local exhaust ventilation	Duration of activity: < 10 min Occupational Health and Safety Management System: Advanced	PPE RPE: Yes (with APF 30)	Concentration of CrO3: < 100% Place of use: Indoor			36/37
WCS 8	PROC 4: Other surface treatment - loading of jigs		General ventilation: Basic (1-3 ACH per hour)	Duration of activity: < 8 hours Occupational Health and Safety Management System: Advanced		Concentration of CrO3: < 100% Place of use: Indoor			38
WCS 9	PROC 13: Other surface treatment - chemical pre-treatment		General ventilation: Basic (1-3 ACH per hour) Local exhaust ventilation, if Cr(VI) or other dangerous substances are used in the pre-treatment	Duration of activity: < 8 hours Occupational Health and Safety Management System: Advanced	PPE	Concentration of CrO3: < 100% Place of use: Indoor			39

WCS 10	PROC 2, 13: Other surface treatment- by dipping/immersi on		General ventilation: Basic (1-3 ACH per hour) Local exhaust ventilation	Duration of activity: < 8 hours Occupational Health and Safety Management System: Advanced	PPE	Concentration of CrO3: < 100% Place of use: Indoor			39/40
WCS 11	PROC 13: Other surface treatment - rinsing/drying		General ventilation: Basic (1-3 ACH per hour)	Duration of activity: < 8 hours Occupational Health and Safety Management System: Advanced	PPE	Concentration of CrO3: < 100% Place of use: Indoor			40
WCS 12	PROC 13: Other surface treatment - chemical post- treatment		General ventilation: Basic (1-3 ACH per hour) Local exhaust ventilation, if other dangerous substances are used in the post- treatment	Duration of activity: < 8 hours Occupational Health and Safety Management System: Advanced	PPE	Concentration of CrO3: < 100% Place of use: Indoor			41
WCS 13	PROC 4: Other surface treatment – cleaning and unloading of jigs		General ventilation: Basic (1-3 ACH per hour)	Duration of activity: < 8 hours Occupational Health and Safety Management System: Advanced	PPE	Concentration of CrO3: < 100% Place of use: Indoor			41/42
WCS 14	PROC 8b: Other surface treatment - cleaning of equipment		General ventilation: Basic (1-3 ACH per hour)	Duration of activity: < 1 hour Occupational Health and Safety Management System: Advanced	PPE	Concentration of CrO3: < 100% Place of use: Indoor			42
WCS 15	PROC 8a: Maintenance of equipment		General ventilation: Basic (1-3 ACH per hour)	Duration of activity: < 1 hour Occupational Health and Safety Management System: Advanced	PPE	Concentration of CrO3: < 100% Place of use: Indoor			42/43

WCS 16	PROC 7: Surface treatment by spraying in spray booth		Down-flow spray room Local exhaust ventilation	Duration of activity: < 2 hours Occupational Health and Safety Management System: Advanced	PPE RPE: Yes (with APF 30)	Concentration of CrO3: < 100% Place of use: Spray room			44/45
WCS 17	PROC 7: Surface treatment by spraying outside of spray-booth		General ventilation: Good natural ventilation	Duration of activity: < 30 min Occupational Health and Safety Management System: Advanced	PPE RPE: Yes (with APF 400)	Concentration of CrO3: < 100% Place of use: Indoor			46
WCS 18	PROC7: Surface treatment in automatic spray tunnel		General ventilation: Good natural ventilation Medium level containment <i>"The material transfer is enclosed with the receiving vessel being docked or sealed to the source vessel"</i> Advanced REACH Tool (ART) version 1.5 Secondary: Other enclosing hoods (90% reduction)	Duration of activity: < 8 hours Occupational Health and Safety Management System: Advanced	PPE	Concentration of CrO3: < 100% Place of use: Indoor			47/48
WCS 19	PROC7: Surface treatment by spraying in closed, extracted spray bath		General ventilation: ventilation rate: 3 ACH per hour Medium level containment <i>"The material transfer is enclosed with the receiving vessel being docked or sealed to the source vessel"</i> Advanced REACH Tool (ART) version 1.5 Secondary: Fume cupboard (99% reduction)	Duration of activity: < 10 min Frequency of activity: 1 time/week Occupational Health and Safety Management System: Advanced	PPE RPE: Yes (with APF 400)	Concentration of CrO3: < 100% Place of use: Indoor			49/50

WCS 20	PROC 10: Surface treatment by brushing/rolling (small to medium sized areas)		General ventilation: Good natural ventilation Local exhaust ventilation	Duration of activity: < 3 hours Occupational Health and Safety Management System: Advanced	PPE RPE: Yes (with APF 30)	Concentration of CrO3: < 100% Place of use: Indoor			50/51
WCS 21	PROC 10: Surface treatment by brushing or penstick (small areas/touch-up)		General ventilation: Good natural ventilation	Duration of activity: < 3 hours Occupational Health and Safety Management System: Advanced	PPE	Concentration of CrO3: < 100% Place of use: Indoor/Outdoor			52
WCS 22	PROC 26: Drying/self-curing		General ventilation: Good natural ventilation	Duration of activity: < 30 min for activities of workers within 1 m distance < 90 min for activities of workers outside 1m distance Occupational Health and Safety Management System: Advanced	PPE	Concentration of CrO3: < 100% Place of use: Indoor			53/54
WCS 23	PROC 26: Drying/heat-curing		General ventilation: Good natural ventilation Local exhaust ventilation	Duration of activity: < 8 hours Occupational Health and Safety Management System: Advanced	PPE	Concentration of CrO3: < 100% Place of use: Indoor			55/56
WCS 24	PROC 8b: Cleaning of equipment-tools cleaning (closed system)		General ventilation: Good natural ventilation Local exhaust ventilation	Duration of activity: < 1 hour Occupational Health and Safety Management System: Advanced	PPE	Concentration of CrO3: < 100% Place of use: Indoor			56/57
WCS 25	PROC 8b: Cleaning of equipment-tools cleaning (spray cabin)		Specialized ventilation: (more than 10 ACH)	Duration of activity: < 1 hour Occupational Health and Safety Management System: Advanced	PPE	Concentration of CrO3: < 100% Place of use: Indoor (Spray room)			58

WCS 26	PROC 8b: Cleaning- spray cabin and ancillary areas		General ventilation: Good natural ventilation	Duration of activity: < 1 hour Occupational Health and Safety Management System: Advanced	PPE	Concentration of CrO3: < 100% Place of use: Indoor			59/60
WCS 27	PROC 8a: Infrequent maintenance activities		General ventilation: Good natural ventilation	Duration of activity: < 4 hours Frequency of activity: 1 time/month Occupational Health and Safety Management System: Advanced	PPE RPE: Yes (with APF 30)	Concentration of CrO3: < 100% Place of use: Indoor			61
WCS 28	PROC 15: Laboratory analysis (sampling, laboratory analysis)		General ventilation: Good natural ventilation <i>For sampling:</i> Local exhaust ventilation	Duration of activity: < 1.5 hours Occupational Health and Safety Management System: Advanced	PPE	Concentration of CrO3: < 100% Place of use: Indoor			62/63
WCS 29	PROC 21,24: Machining operations on small to medium sized parts containing Cr(VI) on an extracted bench/extraction booth including cleaning		General ventilation: Good natural ventilation Local exhaust ventilation/vacuum cleaner with HEPA filter	Duration of activity: < 3 hours Occupational Health and Safety Management System: Advanced	PPE RPE: Yes (with APF 10) <i>if workplace monitoring data do not confirm negligible exposure clearly below 1 µg/m³</i>	The Cr(VI) weight fraction of the part is assumed to be < 0.1 %. <i>In case of lower or higher Cr(VI) content, OCs and RMMs could be adjusted for that different situation</i> Place of use: Indoor			64/65

WCS 30	PROC 21,24: Machining operations on small to medium sized surfaces containing Cr(VI) on an extracted bench/extraction booth including cleaning		General ventilation: Good natural ventilation Local exhaust ventilation	Duration of activity: < 3 hours Occupational Health and Safety Management System: Advanced	PPE RPE: Yes (with APF 30) <i>if workplace monitoring data do not confirm negligible exposure clearly below 1 µg/m³</i>	The Cr(VI) content of the surface is assumed to be < 3 %. <i>In case of lower or higher Cr(VI) content, OCs and RMMs could be adjusted for that different situation</i> Place of use: Indoor			66/67
WCS 31	PROC 21,24: Machining operations in large work areas on parts containing Cr(VI) including cleaning		General ventilation: Good natural ventilation Wetting at the point of release/on-tool extraction/vacuum cleaning	Duration of activity: < 1 hour Occupational Health and Safety Management System: Advanced	PPE RPE: Yes (with APF 10) <i>if workplace monitoring data do not confirm negligible exposure clearly below 1 µg/m³</i>	The Cr(VI) weight fraction of the part is assumed to be < 0.1 %. <i>In case of lower or higher Cr(VI) content, OCs and RMMs could be adjusted for that different situation</i> Place of use: Indoor			67/68
WCS 32	PROC 21,24: Machining operations in large work areas on surfaces containing Cr(VI) including cleaning		General ventilation: Good natural ventilation Wetting at the point of release/on-tool extraction/vacuum cleaning	Duration of activity: < 1 hour Occupational Health and Safety Management System: Advanced	PPE RPE: Yes (with APF 30) <i>if workplace monitoring data do not confirm negligible exposure clearly below 1 µg/m³</i>	The Cr(VI) content of the surface is assumed to be < 3 %. <i>In case of lower or higher Cr(VI) content, OCs and RMMs could be adjusted for that different situation</i> Place of use: Indoor			69/70

WCS 33	PROC 21,24: Machining operations on parts containing Cr(VI) in small work areas including cleaning		General ventilation: Good natural ventilation	Duration of activity: < 1 hour Occupational Health and Safety Management System: Advanced	PPE RPE: Yes (with APF 400) <i>if workplace monitoring data do not confirm negligible exposure clearly below 1 µg/m³</i>	The Cr(VI) weight fraction of the part is assumed to be < 0.1 %. <i>In case of lower or higher Cr(VI) content, OCs and RMMs could be adjusted for that different situation</i> Place of use: Indoor			71
WCS 34	PROC 21,24: Machining operations on surfaces containing Cr(VI) in small work areas including cleaning		General ventilation: Good natural ventilation	Duration of activity: < 1 hour Occupational Health and Safety Management System: Advanced	PPE RPE: Yes (with APF 1000) <i>if workplace monitoring data do not confirm negligible exposure clearly below 1 µg/m³</i>	The Cr(VI) content of the surface is assumed to be < 3 %. <i>in case of lower or higher Cr(VI) content, OCs and RMMs could be adjusted for that different situation</i> Place of use: Indoor			72/73
WCS 35	PROC 1: Storage of articles		General ventilation: Basic general ventilation (1-3 air changes per hour)	Duration of activity: < 8 hours Occupational Health and Safety Management System: Advanced		Concentration of CrO3: not detectable or residual Place of use: Indoor/Outdoor			74

WCS 36	PROC 8b: Waste management		General ventilation: Good natural ventilation <i>For solid process waste (empty containers, filters) handling:</i> Low level containment: <i>"Physical containment or enclosure of the source of emission. The air within the enclosure is not actively ventilated or extracted. The enclosure is not opened during the activity."</i> Advanced REACH Tool (ART) version 1.5	Duration of activity: < 30 min Occupational Health and Safety Management System: Advanced	PPE <i>For solid process waste (empty containers, filters) handling:</i> RPE: Yes (with APF 30)	Concentration of CrO3: < 100% Place of use: Indoor			74/75
<p>§ Except in cases involving very low content of Cr(VI) and occasional release [e.g. infrequent formulation using small quantities of Cr(VI)] where exposure potential is demonstrated to be negligible</p> <p>§§ Estimated Clocal based on measured data: 3.25E-06 mg Cr(VI)/m³</p> <p>* Adequate protective clothing, chemical-resistant gloves, goggles in case of potential exposure to chromium trioxide.</p> <p>** RPE is specified in cases where exposure to chromium trioxide in solid form may occur</p>									

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, ACH=Air Changes per Hour, RPE=Respiratory Protective Equipment, APF=Assigned Protection Factor