

Succinct Summary of Representative Risk Management Measures (RMMs) and Operational Conditions (OCs)

Legal name of applicant(s): *Chemservice GmbH; Atotech Deutschland GmbH; Boeing Distribution Inc.; Prospere Chemical Logistic OÜ; CROMITAL S.P.A.; Elementis Chromium LLP; MacDermid Enthone GmbH*

Submitted by: *Chemservice GmbH in its legal capacity as Only Representative of Brother CISA (Pty) Ltd.*

Substance: *chromium trioxide, EC Number: 215-607-8, CAS Number: 1333-82-0*

Use title: *Formulation of mixtures*

Use number: *Use 1*

June 2021

IMPORTANT: This document was initially prepared with reference to the Chemical Safety Report (CSR) prepared as part of the Application for Authorisation. It has since been revised to reflect amendments to the Exposure Scenarios, required as a condition of the Authorisation. In this document, some but not all WCS of the CSR are indicated for reference purposes. The relevant page in the CSR is also referenced; however, authorities should refer to the amended Exposure Scenarios as attached to the SDS for a complete discussion of the RMMs and OCs.

Table 1: CTAC ES – Environmental Contributing Scenarios

CTAC ES and use	Task (ERC/spERC)	Tonnage	Technical RMMs	Effectiveness of waste water and waste air treatment (for ERC)	Release factors: water, air and soil (for ERC)	Original info in CSR on page(s)
Exposure Scenario (ES) on Formulation (Environmental Contributing Scenario) (Uses 1) (GPS E3bis)	Task: Formulation (ERC 2) (ECS 1)	5000 [as Cr(VI)]	<p>All solid and any liquid waste is collected and either the collected waste is directly forwarded to an external waste management company, or Cr(VI) in wastewater is reduced to Cr(III) on-site, or treated by vacuum evaporation, and the treated waste is either recycled or forwarded to an external waste management company (licenced contractor) for disposal as hazardous waste.</p> <p>Except in case of very low content of Cr(VI) during occasional release [e.g. infrequent formulation using very small quantities of Cr(VI)], air emissions relating to LEV or extraction systems are filtered or passed through wet scrubbers to remove particulates prior to release to atmosphere. Information from facilities indicates that removal efficiency of at least 99% is typical for the industry.</p>	<p>Negligible discharge of Cr(VI) in wastewater from the site</p> <p>Air emission abatement: at least 99% efficiency.* 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.</p> <p>* When needed, exhaust air is passed through filters or wet scrubbers according to best available technique (minimum efficiency 99 %)</p>	<p>Water: Negligible</p> <p>Air: 1.6E-05 % § †</p> <p>Soil: 0 (no release to soil)</p>	pp. 22-23

§ The 90th percentile value of 4.86E-08 mg Cr(VI)/m³ is used as worst-case estimate of Clocal_{air,ann}

† The release factor was estimated using the highest tonnage reported and the highest estimated Clocal

Table 2: CTAC ES – Worker Contributing Scenarios

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
Exposure Scenario (ES) on Storage (Use 1) (GPS #####)	<p>Task 1: Delivery and storage of raw material (PROC 1) (WCS 1)</p> <p>Task 2: Storage of formulation (PROC 1) (WCS 9)</p>	<p>General ventilation: Basic (1-3 ACH)</p>	<p>Duration of activity: < 8 hours</p> <p>Occupational Health and Safety Management System: Advanced</p> <p>Training and supervision: All persons with access to the storage areas must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times.</p> <p>Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of</p> <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” <p>Hence, static air measurement could be available for the storage area to demonstrate absence of emission.</p>	<ul style="list-style-type: none"> • Protective eye goggles • Protective gloves • Safety shoes • Acid-resistant clothing 	<p>Concentration of Cr(VI): < 50%</p> <p>Place of use: Indoor</p>	<p>p. 24</p> <p>p. 30</p>

<p>Exposure Scenario (ES) on Decanting, Mixing & Re-Filling (Use 1) (GPS A1, D3, D4, D5)</p>	<p>Task 1: Decanting of solids (PROC 8b) (WCS 2)</p> <p>Task 2: Transfer to mixing vessel – aqueous solution (PROC 8a/8b) (WCS 3)</p> <p>Task 3: Transfer to mixing vessel – solids (PROC 8b) (WCS 4)</p> <p>Task 4: Mixing by dilution, dispersion (closed or open process) (PROC 2 to PROC 5) (WCS 5)</p> <p>Task 5: Transfer to small containers (including filtering) (PROC 9) (WCS 6)</p> <p>Task 6: Cleaning of equipment (PROC 8b) (WCS 7)</p> <p>Task 7: Maintenance of equipment (PROC 8a) (WCS 8)</p>	<p>General ventilation: Basic (1-3 ACH)</p> <p>Local exhaust ventilation: Tasks 1, 2, 4, 5, 6, 7: Yes</p> <p>Containment: Task 4: Semi-closed process with occasional controlled exposure</p>	<p>Duration of activity: Task 1, 3: < 4 hours</p> <p>Task 2, 4, 5: < 8 hours</p> <p>Task 6: < 1 hour</p> <p>Task 7: < 30 min</p> <p>Occupational Health and Safety Management System: Advanced</p> <p>Training and supervision: Task 1: All persons with access to chromium trioxide must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times.</p> <p>Tasks 2-6: All persons with access to the formulation/mixing area must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all time.</p> <p>Task 7: All persons with access to the plating line must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment.</p> <p>Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on</p>	<p>Tasks 1-7:</p> <ul style="list-style-type: none"> Protective (eye) goggles Protective gloves Acid-resistant clothing / footwear <p>Task 1:</p> <ul style="list-style-type: none"> Full PPE is necessary during decanting and weighing of solids Respiratory protection: <ul style="list-style-type: none"> RPE with P3 filter <i>Yes [Respirator with APF 30] [Effectiveness Inhal: 96.67%]; When handling solid chromium trioxide, at least half-mask with P3 filter (APF 30 according to German BG rule 190) is worn</i> <p>Task 2:</p> <ul style="list-style-type: none"> Respiratory protection: <ul style="list-style-type: none"> Where there is potential for airborne particulates in the workplace, respiratory protection (P3 filter). <i>If no LEV is in place, at least half-mask with P3 filter (APF 30 according to German BG rule 190) is worn</i> <p>Task 3:</p> <ul style="list-style-type: none"> Respiratory protection: <ul style="list-style-type: none"> Where there is potential for airborne particulates in the workplace, respiratory protection (P3 filter). <i>Yes [Respirator with APF 30] [Effectiveness Inhal: 96.67%]; When handling solid chromium trioxide, at least half-mask with P3 filter (APF 30 according to German BG rule 190) is worn</i> <p>Task 4:</p> <ul style="list-style-type: none"> Respiratory protection: <ul style="list-style-type: none"> Respiratory protection (P3 filter) when handling open drums. <p>Task 5:</p> <ul style="list-style-type: none"> Respiratory protection: 	<p>Concentration of Cr(VI): < 50%</p> <p>Place of use: Indoor</p>	<p>p. 25</p> <p>pp. 25/26</p> <p>pp. 26/27</p> <p>p. 27</p> <p>pp. 27/28</p> <p>p. 28</p> <p>pp. 28/29</p>
--	--	--	---	---	--	--

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
			<p>relevant standard methodologies or protocols. The measurements shall be representative of</p> <ul style="list-style-type: none"> “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; the operational conditions and risk management measures typical for each of those tasks; the number of workers potentially exposed;” <p>Task 1: Hence, static air measurement could be available to demonstrate absence of emission.</p> <p>Task 2, 4, 5: Hence, a typical worker exposure monitoring program could include collection of 2 personal measurements covering each position of the formulation/mixing area with potential for release of chromium trioxide during a normal formulation/mixing cycle. Static measurement might also be appropriate.</p> <p>Task 3, 6: Hence, a typical worker exposure monitoring program could include collection of 2 personal measurements covering each position of the formulation/mixing area with potential for release of chromium trioxide during a normal formulation/mixing cycle.</p> <p>Task 7: Hence, a typical worker exposure monitoring program could include collection of 1 or 2 personal measurement(s) during the maintenance work.</p>	<ul style="list-style-type: none"> If no LEV is in place or if solid mixtures are transferred, at least half-mask with P3 filter. <i>If no LEV is in place or if solid mixtures are transferred, at least half-mask with P3 filter (APF 30 according to German BG rule 190) is worn</i> <p>Task 6:</p> <ul style="list-style-type: none"> Respiratory protection: <ul style="list-style-type: none"> In cases where exposure to chromium trioxide in solid form may occur, at least half-mask with P3 filter is worn <i>In cases where exposure to chromium trioxide in solid form may occur, at least half-mask with P3 filter (APF 30 according to German BG rule 190) is worn; [Respirator with APF 30] [Effectiveness Inhal: 96.67%]</i> <p>Task 7:</p> <ul style="list-style-type: none"> Face mask/visor in case of splashing risk. Respiratory protection: <ul style="list-style-type: none"> RPE with P3 filter. <i>Yes [Respirator with APF 30] [Effectiveness Inhal: 96.67%]; In cases exposure to airborne Cr(VI) might occur, at least half-mask with P3 filter (APF 30 according to German BG rule 190) is worn</i> 		

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
Exposure Scenario (ES) on Sampling (Uses 1, 2, 4-6) (GPS D2)	Task: Sampling (PROC 15) (WCS 10)	Ventilation rate: Only good natural ventilation Localised controls: Primary: Fixed capturing hood (90.00 % reduction)	Duration of activity: < 30 min Training and supervision: All persons with access to operations for sampling must be instructed in the risks from working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” Hence, a typical worker exposure monitoring program for sampling could include collection of 1 personal measurement during the sampling of chromium trioxide during a normal production cycle. Static measurement might also be appropriate.	<ul style="list-style-type: none"> • Protective eye goggles • Protective gloves • Acid-resistant clothing / footwear 	Concentration of Cr(VI) in mixture: 10-50 % Work area: Indoors	pp. 31-33

<p>Exposure Scenario (ES) on Waste and Wastewater management (Use 1, 2, 4-6) (GPS D7)</p>	<p>Task: Waste and wastewater management (PROC 8b) (WCS 11)</p>	<p>Ventilation rate: Only good natural ventilation</p> <p>Localised controls: 1. Process waste: Primary: Low level containment (90.00 % reduction)</p>	<p>Duration of activity: 1. Process waste: < 30 min 2. Wastewater treatment: < 10 min</p> <p>Training and supervision: 1. Process waste: All persons with access to the waste storage area must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times. 2. Wastewater treatment: All persons with access to the wastewater treatment plant must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times.</p> <p>Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of</p> <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” <p>1. Process waste: Hence, depending on exposure potential, personal air measurement could be available to demonstrate absence of emission.</p> <p>2. Wastewater treatment:</p>	<p>1. Process waste:</p> <ul style="list-style-type: none"> • Respiratory protection: <ul style="list-style-type: none"> • RPE with P3 filter when potential to exposure to airborne Cr(VI) • <i>Yes [Respirator with APF 30] [Effectiveness Inhal: 96.67%]; During waste transfer activities with potential to exposure to airborne Cr(VI) at least half-mask with P3 filter (APF 30 according to German BG rule 190) is worn</i> <p>2. Wastewater treatment:</p> <ul style="list-style-type: none"> • Protective eye goggles • Protective Gloves • Acid-resistant clothing / footwear 	<p>Powder weight fraction [Cr(VI)]: 1. Process waste: 10-50 %</p> <p>Concentration of Cr(VI) in mixture: 2. Wastewater treatment: Minute</p> <p>Work area: Indoors</p>	<p>pp. 33/34</p>
---	--	--	---	--	---	------------------

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
			Hence, a typical worker exposure monitoring program could include collection of a static measurement at the wastewater treatment plant. Personal monitoring may not be necessary.			

Succinct Summary of Representative Risk Management Measures (RMMs) and Operational Conditions (OCs)

Legal name of applicant(s): *Chemservice GmbH; Atotech Deutschland GmbH; Boeing Distribution Inc.; Prospere Chemical Logistic OÜ; CROMITAL S.P.A.; Elementis Chromium LLP; MacDermid Enthone GmbH*

Submitted by: *Chemservice GmbH in its legal capacity as Only Representative of Brother CISA (Pty) Ltd.*

Substance: *chromium trioxide, EC Number: 215-607-8, CAS Number: 1333-82-0*

Use title: *Functional chrome plating*

Use number: *Use 2*

June 2021

IMPORTANT: This document was initially prepared with reference to the Chemical Safety Report (CSR) prepared as part of the Application for Authorisation. It has since been revised to reflect amendments to the Exposure Scenarios, required as a condition of the Authorisation. In this document, some but not all WCS of the CSR are indicated for reference purposes. The relevant page in the CSR is also referenced; however, authorities should refer to the amended Exposure Scenarios as attached to the SDS for a complete discussion of the RMMs and OCs.

Table 1: CTAC ES – Environmental Contributing Scenarios

CTAC ES and use	Task (ERC/spERC)	Tonnage	Technical RMMs	Effectiveness of waste water and waste air treatment (for ERC)	Release factors: water, air and soil (for ERC)	Original info in CSR on page(s)
Exposure Scenario (ES) on Use at Industrial Site – Functional Chrome Plating (Environmental Contributing Scenario) (Use 2) (GPS E3bis)	Task: Functional chrome plating (ERC 6b) (ECS 1)	3000 [as Cr(VI)]	All solid and any liquid waste is collected and either the collected waste is directly forwarded to an external waste management company, or Cr(VI) in wastewater is reduced to Cr(III) on-site, and the treated waste is either recycled or forwarded to an external waste management company (licenced contractor) for disposal as hazardous waste Exhaust air is passed through filters or wet scrubbers according to best available technique (minimum efficiency 99 %)	Negligible discharge of Cr(VI) in wastewater from the site Air emission abatement: at least 99% efficiency* * Exhaust air is passed through filters or wet scrubbers according to best available technique (minimum efficiency 99 %)	Water: Negligible Air: 0.001 % § † Soil: 0 (no release to soil)	pp. 23-25

§ The 90th percentile value of 2.85E-06 mg Cr(VI)/m³ is used as worst-case estimate of Clocal_{air,ann}.

† The release factor was estimated using default from ERC6b (0.1%) and applying efficiency of air abatement of 99%.

Table 2: CTAC ES – Worker Contributing Scenarios

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
Exposure Scenario (ES) on Delivery and Storage (Uses 2, 4-6) (GPS D1)	Task: Delivery and storage of raw material (PROC 1) (WCS 1)	General ventilation: Basic (1-3 ACH)	Duration of activity: < 8 hours Occupational Health and Safety Management System: Advanced Training and supervision: All persons with access to the storage areas must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times. Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” Hence, static air measurement could be available for the storage area to demonstrate absence of emission.	<ul style="list-style-type: none"> • Protective eye goggles • Protective gloves • Safety shoes • Acid-resistant clothing 	Concentration of Cr(VI): < 50% Place of use: Indoor	p. 25

<p>Exposure Scenario (ES) on Decanting, Mixing & Re-Filling (Use 2) (GPS D3)</p>	<p>Task 1: Decanting of liquids (PROC 8b) (WCS 2)</p> <p>Task 2: Decanting and weighing of solids (PROC 8b) (WCS 3)</p> <p>Task 3: Mixing – Liquids (PROC 5) (WCS 4)</p> <p>Task 4: Mixing – Solids (PROC 5) (WCS 5)</p> <p>Task 5: Re-filling of baths – Liquids (PROC 8b) (WCS 6)</p> <p>Task 6: Re-filling of baths – Solids (PROC 8b) (WCS 7)</p>	<p>Ventilation rate: Only good natural ventilation</p> <p>Localised controls: Task 1: Primary: Medium level containment (99.00 % reduction) The material transfer is enclosed with the receiving vessel being docked or sealed to the source vessel.</p> <p>Task 2: Primary: No localized controls (0.0 % reduction) In most cases, this activity is conducted under LEV. However, this has not been considered in this exposure assessment.</p> <p>Tasks 3, 4: Primary: Low level containment (90.00 % reduction)</p> <p>Tasks 5, 6: Primary: Fixed capturing hood (90.00 % reduction)</p> <p>Containment: Task 2, 4: Handling that reduces contact between product and adjacent air.</p>	<p>Duration of activity: Tasks 1, 2: < 60 min</p> <p>Task 3, 4: < 15 min</p> <p>Task 5, 6: < 10 min</p> <p>Training and supervision: All persons with access to chromium trioxide must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times.</p> <p>Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of</p> <ul style="list-style-type: none"> “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; the operational conditions and risk management measures typical for each of those tasks; the number of workers potentially exposed;” <p>Tasks 1, 2, 3, 4: Hence, static air measurement could be available to demonstrate absence of emission.</p> <p>Tasks 5, 6: Hence, a typical worker exposure monitoring program could include collection of 1 (or 2) personal measurement(s) during the re-adjustment work. Static measurements might also be appropriate.</p>	<p>Tasks 1-6:</p> <ul style="list-style-type: none"> Protective eye goggles. Protective gloves. Acid-resistant clothing / footwear. <p>Task 2, 4, 6:</p> <ul style="list-style-type: none"> Respiratory protection: <ul style="list-style-type: none"> RPE with P3 filter <i>Yes [Respirator with APF 30] [Effectiveness Inhal: 96.67%]; When handling solid chromium trioxide, at least half-mask with P3 filter (APF 30 according to German BG rule 190) is worn</i> <p>Task 6:</p> <ul style="list-style-type: none"> Face mask in case of splashing risk 	<p>Concentration of Cr(VI): Tasks 1, 3, 5: 10 – 50%</p> <p>Powder weight fraction [Cr(VI)]: Tasks 2, 4, 6: 10 – 50%</p> <p>Work area: Indoor</p>	<p>pp. 26/27</p> <p>pp. 27/28</p> <p>p. 29</p> <p>pp. 30/31</p> <p>pp. 31/32</p> <p>pp. 33/34</p>
<p>Exposure Scenario (ES) on Functional Chrome Plating in an Open Tank</p>	<p>Task 1: Functional chrome plating – Loading and unloading of jigs</p>	<p>General ventilation: Basic (1-3 ACH)</p>	<p>Duration of activity: Tasks 1, 2: < 8 hours</p> <p>Task 3: < 60 min</p>	<p>Task 1:</p> <ul style="list-style-type: none"> No specific PPE apart from safety shoes and gloves are usually required during loading and unloading. 	<p>Concentration of Cr(VI): 10 – 50%</p> <p>Place of use:</p>	<p>pp. 35 – 39</p>

<p>(Manual Loading) (Use 2) (GPS B7, D4, D5)</p>	<p>(PROC 4) (for all tasks: WCS 8-15)</p> <p>Task 2: Functional chrome plating in an open tank with manual loading to bath (PROC 2, 13) (for all tasks: WCS 8-15)</p> <p>Task 3: Maintenance of equipment (PROC 8a) (for all tasks: WCS 8-15)</p>	<p>Local exhaust ventilation: Task 2: Yes</p>	<p>Occupational Health and Safety Management System: Advanced</p> <p>Training and supervision: Task 1: Apart from the general training requirements and supervision conditions implemented by each individual employer, no additional training and supervision terms have been defined in the authorization conditions by the EC.</p> <p>Task 2: All persons with access to the plating line must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times.</p> <p>Task 3: All persons with access to the plating line must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment.</p> <p>Monitoring: Task 1: Direct exposure to CrVI is not possible from the un-plated or cleaned and chrome-plated products. Secondary exposure is possible from the chrome baths in the vicinity (far-field exposure). Task 1-3: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of</p> <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” <p>Task 1: Hence, a typical worker exposure monitoring program for loading/unloading operations could involve personal monitoring but static air monitoring may also be appropriate.</p> <p>Task 2: Hence, a typical worker exposure monitoring program for chromium plating operations in an open tank with manual loading to</p>	<p>Task 2:</p> <ul style="list-style-type: none"> • Protective eye goggles. • Protective gloves. • Acid-resistant clothing / footwear. • Respiratory protection: <ul style="list-style-type: none"> • RPE with P3 filter might also be appropriate depending on the measured exposure level. <p>Task 3:</p> <ul style="list-style-type: none"> • Protective eye goggles. • Protective gloves. • Acid-resistant clothing / footwear. • Face mask/visor in case of splashing risk. • Respiratory protection <ul style="list-style-type: none"> • P3 filter (mandatory for encapsulated open tank process lines, recommended for other process lines). 	<p>Indoor</p>	
--	---	--	--	--	---------------	--

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
			bath could involve personal monitoring of all employees with access to the plating line. Static air monitoring may also be appropriate. Task 3: Hence, a typical worker exposure monitoring program could include collection of 1 (or 2) personal measurement(s) during the maintenance work. This scenario also covers infrequent maintenance activities with longer duration.			

<p>Exposure Scenario (ES) on Functional Chrome Plating in an Open Tank or Bath (Semi-Automatic Loading) (Use 2) (GPS B6, D4, D5)</p>	<p>Task 1: Functional chrome plating – Loading and unloading of jigs (PROC 4) (for all tasks: WCS 8-15)</p> <p>Task 2: Functional chrome plating in an open tank or bath with semi-automated loading to bath (PROC 2, 13) (for all tasks: WCS 8-15)</p> <p>Task 3: Maintenance of equipment (PROC 8a) (for all tasks: WCS 8-15)</p>	<p>General ventilation: Basic (1-3 ACH)</p> <p>Local exhaust ventilation: Task 2: Yes</p>	<p>Duration of activity: Tasks 1, 2: < 8 hours Task 3: < 60 min</p> <p>Occupational Health and Safety Management System: Advanced</p> <p>Training and supervision: Task 1: Apart from the general training requirements and supervision conditions implemented by each individual employer, no additional training and supervision terms have been defined in the authorization conditions by the EC. Task 2: All persons with access to the plating line must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times. Task 3: All persons with access to the plating line must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment.</p> <p>Monitoring: Task 1: Direct exposure to CrVI is not possible from the un-plated or cleaned and chrome-plated products. Secondary exposure is possible from the chrome baths in the vicinity (far-field exposure). Task 1-3: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of</p> <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” 	<p>Task 1:</p> <ul style="list-style-type: none"> • No specific PPE apart from safety shoes and gloves are usually required during loading and unloading. <p>Task 2:</p> <ul style="list-style-type: none"> • Protective eye goggles or face shield. • Protective gloves. • Acid-resistant clothing / footwear. • Respiratory protection: <ul style="list-style-type: none"> • RPE with P3 filter might also be appropriate depending on the measured exposure level. <p>Task 3:</p> <ul style="list-style-type: none"> • Protective eye goggles. • Protective gloves. • Acid-resistant clothing / footwear. • Face mask/visor in case of splashing risk. • Respiratory protection <ul style="list-style-type: none"> • P3 filter (mandatory for encapsulated open tank process lines, recommended for other process lines). 	<p>Concentration of Cr(VI): 10 – 50%</p> <p>Place of use: Indoor</p>	<p>pp. 35 – 39</p>
--	--	---	---	--	--	--------------------

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
			<p>Hence, a typical worker exposure monitoring program for loading/unloading operations could involve personal monitoring but static air monitoring may also be appropriate.</p> <p>Task 1: Hence, a typical worker exposure monitoring program for loading/unloading operations could involve personal monitoring but static air monitoring may also be appropriate.</p> <p>Task 2: Hence, a typical worker exposure monitoring program for chromium plating operations in an open tank or bath with semi-automated loading to bath could involve annual personal monitoring for workers with access to the plating line. Static air monitoring may also be appropriate.</p> <p>Task 3: Hence, a typical worker exposure monitoring program will include collection of 1 (or 2) personal measurement(s) during the maintenance work.</p> <p>This scenario also covers infrequent maintenance activities with longer duration.</p>			

<p>Exposure Scenario (ES) on Functional Chrome Plating in Closed Reactor Cells (Use 2) (GPS B1, D4, D5)</p>	<p>Task 1: Functional chrome plating – Loading and unloading of jigs (PROC 4) (for all tasks: WCS 8-15)</p> <p>Task 2: Functional chrome plating in closed reactor cells (PROC 2) (for all tasks: WCS 8-15)</p> <p>Task 3: Maintenance of equipment (PROC 8a) (for all tasks: WCS 8-15)</p>	<p>General ventilation: Basic (1-3 ACH)</p> <p>Local exhaust ventilation: Task 2: Yes</p>	<p>Duration of activity: Tasks 1, 2: < 8 hours Task 3: < 60 min</p> <p>Occupational Health and Safety Management System: Advanced</p> <p>Training and supervision: Task 1: Apart from the general training requirements and supervision conditions implemented by each individual employer, no additional training and supervision terms have been defined in the authorization conditions by the EC.</p> <p>Task 2: All persons with responsibility for and access to the plating line must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times.</p> <p>Task 3: All persons with access to the plating line must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment.</p> <p>Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of</p> <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” <p>Task 1: Hence, static air measurement could be available for the storage area to demonstrate absence of emission.</p> <p>Task 2: Hence, a typical worker exposure monitoring program for a closed reactor cell configuration could include collection of static air</p>	<p>Task 1:</p> <ul style="list-style-type: none"> • No specific PPE apart from safety shoes and gloves are usually required during loading and unloading. <p>Task 2:</p> <ul style="list-style-type: none"> • No access to the plating line occurs during normal operations. Therefore, no special PPE to protect against exposure to chromium trioxide is required. <p>Task 3:</p> <ul style="list-style-type: none"> • Protective eye goggles. • Protective gloves. • Acid-resistant clothing / footwear. • Face mask/visor in case of splashing risk. • Respiratory protection <ul style="list-style-type: none"> • P3 filter (mandatory for encapsulated open tank process lines, recommended for other process lines). 	<p>Concentration of Cr(VI): 10 – 50%</p> <p>Place of use: Indoor</p>	<p>pp. 35 – 39</p>
---	--	---	--	--	--	--------------------

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
			<p>measurements at 3-5 locations along the plating line (i.e. those with greatest potential for release of chromium trioxide during a normal production cycle). Personal monitoring will usually not be necessary.</p> <p>Task 3: Hence, a typical worker exposure monitoring program could include collection of 1 (or 2) personal measurement(s) during the maintenance work.</p> <p>This scenario also covers infrequent maintenance activities with longer duration.</p>			

<p>Exposure Scenario (ES) on Functional Chrome Plating in Covered Tanks or Baths (Use 2) (GPS B2, D4, D5)</p>	<p>Task 1: Functional chrome plating – Loading and unloading of jigs (PROC 4) (for all tasks: WCS 8-15)</p> <p>Task 2: Functional chrome plating in covered tanks or baths (PROC 2, 13) (for all tasks: WCS 8-15)</p> <p>Task 3: Maintenance of equipment (PROC 8a) (for all tasks: WCS 8-15)</p>	<p>General ventilation: Basic (1-3 ACH)</p> <p>Local exhaust ventilation: Task 2: Yes</p>	<p>Duration of activity: Tasks 1, 2: < 8 hours Task 3: < 60 min</p> <p>Occupational Health and Safety Management System: Advanced</p> <p>Training and supervision: Task 1: Apart from the general training requirements and supervision conditions implemented by each individual employer, no additional training and supervision terms have been defined in the authorization conditions by the EC.</p> <p>Task 2: All persons with access to the plating line must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times.</p> <p>Task 3: All persons with access to the plating line must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment.</p> <p>Monitoring: Task 1: Direct exposure to CrVI is not possible from the un-plated or cleaned and chrome-plated products. Secondary exposure is possible from the chrome baths in the vicinity (far-field exposure). Task 1-3: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of</p> <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” 	<p>Task 1:</p> <ul style="list-style-type: none"> • No specific PPE apart from safety shoes and gloves are usually required during loading and unloading. <p>Task 2:</p> <ul style="list-style-type: none"> • No access to the plating line occurs during normal operations. Therefore, no special PPE to protect against exposure to chromium trioxide is required. Chemical resistant clothing and eye goggles must be worn during visual inspections and when connecting the flexible hose to the chromium trioxide container. <p>Task 3:</p> <ul style="list-style-type: none"> • Protective eye goggles. • Protective gloves. • Acid-resistant clothing / footwear. • Face mask/visor in case of splashing risk. • Respiratory protection <ul style="list-style-type: none"> • P3 filter (mandatory for encapsulated open tank process lines, recommended for other process lines). 	<p>Concentration of Cr(VI): 10 – 50%</p> <p>Place of use: Indoor</p>	<p>pp. 35 – 39</p>
---	--	---	---	---	--	--------------------

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
			<p>Task 1: Hence, a typical worker exposure monitoring program for loading/unloading operations could involve personal monitoring but static air monitoring may also be appropriate.</p> <p>Task 2: Hence, a typical worker exposure monitoring program for chromium plating operations in covered tanks or baths could include collection of 2 static measurements at each position of the plating line with potential for release of chromium trioxide during a normal production cycle. Personal monitoring may not be necessary when potential for exposure is shown to be negligible.</p> <p>Task 3: Hence, a typical worker exposure monitoring program could include collection of 1 (or 2) personal measurement(s) during the maintenance work. This scenario also covers infrequent maintenance activities with longer duration.</p>			

<p>Exposure Scenario (ES) on Functional Chrome Plating in Tanks or Baths (Automatic Loading) (Use 2) (GPS B5, D4, D5)</p>	<p>Task 1: Functional chrome plating – Loading and unloading of jigs (PROC 4) (for all tasks: WCS 8-15)</p> <p>Task 2: Functional chrome plating in tanks or baths with automated loading to bath (PROC 2, 13) (for all tasks: WCS 8-15)</p> <p>Task 3: Maintenance of equipment (PROC 8a) (for all tasks: WCS 8-15)</p>	<p>General ventilation: Basic (1-3 ACH)</p> <p>Local exhaust ventilation: Task 2: Yes</p>	<p>Duration of activity: Tasks 1, 2: < 8 hours Task 3: < 60 min</p> <p>Occupational Health and Safety Management System: Advanced</p> <p>Training and supervision: Task 1: Apart from the general training requirements and supervision conditions implemented by each individual employer, no additional training and supervision terms have been defined in the authorization conditions by the EC. Task 2: All persons with access to the plating line must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times. Task 3: All persons with access to the plating line must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment.</p> <p>Monitoring: Task 1: Direct exposure to CrVI is not possible from the un-plated or cleaned and chrome-plated products. Secondary exposure is possible from the chrome baths in the vicinity (far-field exposure). Tasks 1-3: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of</p> <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” 	<p>Task 1:</p> <ul style="list-style-type: none"> • No specific PPE apart from safety shoes and gloves are usually required during loading and unloading. <p>Task 2:</p> <ul style="list-style-type: none"> • Protective eye goggles. • Protective gloves. • Acid-resistant clothing / footwear. • Respiratory protection: <ul style="list-style-type: none"> • RPE with P3 filter might also be appropriate depending on the measured exposure level. <p>Task 3:</p> <ul style="list-style-type: none"> • Protective eye goggles. • Protective gloves. • Acid-resistant clothing / footwear. • Face mask/visor in case of splashing risk. • Respiratory protection: <ul style="list-style-type: none"> • P3 filter (mandatory for encapsulated open tank process lines, recommended for other process lines). 	<p>Concentration of Cr(VI): 10 – 50%</p> <p>Place of use: Indoor</p>	<p>pp. 35 – 39</p>
---	---	---	--	--	--	--------------------

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
			<p>Task 1: Hence, a typical worker exposure monitoring program for loading/unloading operations could involve personal monitoring but static air monitoring may also be appropriate.</p> <p>Task 2: Hence, a typical worker exposure monitoring program for Chromium plating operations in open tanks or baths with automated loading to bath could include personal monitoring during a normal production cycle. Static measurement at the plating line during a normal production cycle may support risk assessment.</p> <p>Task 3: Hence, a typical worker exposure monitoring program could include collection of 1 (or 2) personal measurement(s) during the maintenance work. This scenario also covers infrequent maintenance activities with longer duration.</p>			

<p>Exposure Scenario (ES) on Functional Chrome Plating in Tanks or Baths in a Segregated Area (Automatic Loading) (Use 2) (GPS B4, D4, D5)</p>	<p>Task 1: Functional chrome plating – Loading and unloading of jigs (PROC 4) (for all tasks: WCS 8-15)</p> <p>Task 2: Functional chrome plating in tanks or baths in a segregated area and automated loading to bath (PROC 2, 13) (for all tasks: WCS 8-15)</p> <p>Task 3: Maintenance of equipment (PROC 8a) (for all tasks: WCS 8-15)</p>	<p>General ventilation: Basic (1-3 ACH)</p> <p>Local exhaust ventilation: Task 2: Yes</p>	<p>Duration of activity: Tasks 1, 2: < 8 hours Task 3: < 60 min</p> <p>Occupational Health and Safety Management System: Advanced</p> <p>Training and supervision: Task 1: Apart from the general training requirements and supervision conditions implemented by each individual employer, no additional training and supervision terms have been defined in the authorization conditions by the EC.</p> <p>Task 2: All persons with access to the plating line must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times.</p> <p>Task 3: All persons with access to the plating line must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment.</p> <p>Monitoring: Task 1: Direct exposure to CrVI is not possible from the un-plated or cleaned and chrome-plated products. Secondary exposure is possible from the chrome baths in the vicinity (far-field exposure). Tasks 1-3: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of</p> <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” 	<p>Task 1:</p> <ul style="list-style-type: none"> • No specific PPE apart from safety shoes and gloves are usually required during loading and unloading. <p>Task 2:</p> <ul style="list-style-type: none"> • Protective eye goggles. • Protective gloves. • Acid-resistant clothing / footwear. • Respiratory protection: <ul style="list-style-type: none"> • RPE with P3 filter might also be appropriate depending on the measured exposure level. <p>Task 3:</p> <ul style="list-style-type: none"> • Protective eye goggles. • Protective gloves. • Acid-resistant clothing / footwear. • Face mask/visor in case of splashing risk. • Respiratory protection: <ul style="list-style-type: none"> • P3 filter (mandatory for encapsulated open tank process lines, recommended for other process lines). 	<p>Concentration of Cr(VI): 10 – 50%</p> <p>Place of use: Indoor</p>	<p>pp. 35 – 39</p>
--	---	---	--	--	--	--------------------

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
			<p>Task 1: Hence, a typical worker exposure monitoring program for loading/unloading operations could involve personal monitoring but static air monitoring may also be appropriate.</p> <p>Task 2: Hence, a typical worker exposure monitoring program for chromium plating operations in tanks or baths in a segregated area and automated loading to bath could include collection of a static measurement at the plating line (i) during a normal production cycle and (ii) after clearance time and (iii) adjacent to the outer face of each gate to the chamber during a normal production cycle. Personal monitoring may not be necessary when potential for exposure is shown to be negligible.</p> <p>Task 3: Hence, a typical worker exposure monitoring program could include collection of 1 (or 2) personal measurement(s) during the maintenance work. This scenario also covers infrequent maintenance activities with longer duration.</p>			

<p>Exposure Scenario (ES) on Functional Chrome Plating in Tanks or Baths in an Enclosed Chamber (Automatic Loading) (Use 2) (GPS B3, D4, D5)</p>	<p>Task 1: Functional chrome plating – Loading and unloading of jigs (PROC 4) (for all tasks: WCS 8-15)</p> <p>Task 2: Functional chrome plating in tanks or baths in an enclosed chamber and automated loading to bath (PROC 2, 13) (for all tasks: WCS 8-15)</p> <p>Task 3: Maintenance of equipment (PROC 8a) (for all tasks: WCS 8-15)</p>	<p>General ventilation: Basic (1-3 ACH)</p> <p>Local exhaust ventilation: Task 2: Yes</p>	<p>Duration of activity: Tasks 1, 2: < 8 hours Task 3: < 60 min</p> <p>Occupational Health and Safety Management System: Advanced</p> <p>Training and supervision: Task 1: Apart from the general training requirements and supervision conditions implemented by each individual employer, no additional training and supervision terms have been defined in the authorization conditions by the EC.</p> <p>Task 2: All persons with access to the plating line must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times.</p> <p>Task 3: All persons with access to the plating line must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment.</p> <p>Monitoring: Task 1: Direct exposure to CrVI is not possible from the un-plated or cleaned and chrome-plated products. Secondary exposure is possible from the chrome baths in the vicinity (far-field exposure). Task 1-3: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of</p> <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” 	<p>Task 1:</p> <ul style="list-style-type: none"> • No specific PPE apart from safety shoes and gloves are usually required during loading and unloading. <p>Task 2:</p> <ul style="list-style-type: none"> • Full PPE is necessary during cleaning and maintenance: • Protective eye goggles. • Protective gloves. • Acid-resistant clothing / footwear. • Respiratory protection: <ul style="list-style-type: none"> • RPE with P3 filter might also be appropriate depending on the measured exposure level. <p>Task 3:</p> <ul style="list-style-type: none"> • Protective eye goggles. • Protective gloves. • Acid-resistant clothing / footwear. • Face mask/visor in case of splashing risk. • Respiratory protection: <ul style="list-style-type: none"> • P3 filter (mandatory for encapsulated open tank process lines, recommended for other process lines). 	<p>Concentration of Cr(VI): 10 – 50%</p> <p>Place of use: Indoor</p>	<p>pp. 35 – 39</p>
--	---	---	---	--	--	--------------------

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
			<p>Task 1: Hence, a typical worker exposure monitoring program for loading/unloading operations could involve personal monitoring but static air monitoring may also be appropriate.</p> <p>Task 2: Hence, a typical worker exposure monitoring program for chromium plating operations in tanks or baths in an enclosed chamber with automated loading to bath could include collection of a static measurement at the plating line (i) during a normal production cycle and (ii) after clearance time and (iii) adjacent to the outer face of each gate to the chamber during a normal production cycle. Personal monitoring may not be necessary when potential for exposure is shown to be negligible.</p> <p>Task 3: Hence, a typical worker exposure monitoring program could include collection of 1 (or 2) personal measurement(s) during the maintenance work. This scenario also covers infrequent maintenance activities with longer duration.</p>			

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
Exposure Scenario (ES) on Sampling (Uses 1, 2, 4-6) (GPS D2)	Task: Sampling (PROC 15) (WCS 16)	Ventilation rate: Only good natural ventilation Localised controls: Primary: Fixed capturing hood (90.00 % reduction)	Duration of activity: < 30 min Training and supervision: All persons with access to operations for sampling must be instructed in the risks from working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” Hence, a typical worker exposure monitoring program for sampling could include collection of 1 personal measurement during the sampling of chromium trioxide during a normal production cycle. Static measurement might also be appropriate.	<ul style="list-style-type: none"> • Protective eye goggles • Protective gloves • Acid-resistant clothing / footwear 	Concentration of Cr(VI) in mixture: 10-50 % Work area: Indoors	pp. 41/42

<p>Exposure Scenario (ES) on Waste and Wastewater management (Use 1, 2, 4-6) (GPS D7)</p>	<p>Task: Waste and wastewater management (PROC 8b) (WCS 18)</p>	<p>Ventilation rate: Only good natural ventilation</p> <p>Localised controls: 1. Process waste: Primary: Low level containment (90.00 % reduction)</p>	<p>Duration of activity: 1. Process waste: < 30 min 2. Wastewater treatment: < 10 min</p> <p>Training and supervision: 1. Process waste: All persons with access to the waste storage area must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times. 2. Wastewater treatment: All persons with access to the wastewater treatment plant must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times.</p> <p>Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of</p> <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” <p>1. Process waste: Hence, depending on exposure potential, personal air measurement could be available to demonstrate absence of emission. 2. Wastewater treatment: Hence, a typical worker exposure monitoring program could include collection of a static measurement at the wastewater treatment plant. Personal monitoring may not be necessary.</p>	<p>1. Process waste:</p> <ul style="list-style-type: none"> • Respiratory protection: <ul style="list-style-type: none"> • RPE with P3 filter when potential to exposure to airborne Cr(VI) • <i>Yes [Respirator with APF 30] [Effectiveness Inhal: 96.67%]; During waste transfer activities with potential to exposure to airborne Cr(VI) at least half-mask with P3 filter (APF 30 according to German BG rule 190) is worn</i> <p>2. Wastewater treatment:</p> <ul style="list-style-type: none"> • Protective eye goggles • Protective Gloves • Acid-resistant clothing / footwear 	<p>Powder weight fraction [Cr(VI)]: 1. Process waste: 10-50 %</p> <p>Concentration of Cr(VI) in mixture: 2. Wastewater treatment: Minute</p> <p>Work area: Indoors</p>	<p>pp. 44</p>
---	--	--	--	--	---	---------------

Succinct Summary of Representative Risk Management Measures (RMMs) and Operational Conditions (OCs)

Legal name of applicant(s): *Chemservice GmbH; Atotech Deutschland GmbH; Boeing Distribution Inc.; Prospere Chemical Logistic OÜ; CROMITAL S.P.A.; Elementis Chromium LLP; MacDermid Enthone GmbH*

Submitted by: *Chemservice GmbH in its legal capacity as Only Representative of Brother CISA (Pty) Ltd.*

Substance: *chromium trioxide, EC Number: 215-607-8, CAS Number: 1333-82-0*

Use title: *Other surface treatment: Surface treatment for applications in the aeronautics and aerospace industries, unrelated to Functional chrome plating or Functional plating with decorative character*

Use number: *Use 4*

June 2021

IMPORTANT: This document was initially prepared with reference to the Chemical Safety Report (CSR) prepared as part of the Application for Authorisation. It has since been revised to reflect amendments to the Exposure Scenarios, required as a condition of the Authorisation. In this document, some but not all WCS of the CSR are indicated for reference purposes. The relevant page in the CSR is also referenced; however, authorities should refer to the amended Exposure Scenarios as attached to the SDS for a complete discussion of the RMMs and OCs.

Table 1: CTAC ES – Environmental Contributing Scenarios

CTAC ES and use	Task (ERC/spERC)	Tonnage	Technical RMMs	Effectiveness of waste water and waste air treatment (for ERC)	Release factors: water, air and soil (for ERC)	Original info in CSR on page(s)
Exposure Scenario (ES) on Use at Industrial Site – Other Surface Treatment (Environmental Contributing Scenario) (Uses 4 & 5) (GPS E3bis)	Task: Other surface treatment (ERC 6b) (ECS 1)	500 [as Cr(VI)]	<p>All solid and any liquid waste is collected and either the collected waste is directly forwarded to an external waste management company, or Cr(VI) in wastewater is reduced to Cr(III) on-site, or treated by vacuum evaporation, and the treated waste is either recycled or forwarded to an external waste management company (licenced contractor) for disposal as hazardous waste</p> <p>Except in case of very low content of Cr(VI) during occasional release (e.g. infrequent surface treatment using small quantities of Cr(VI) where exposure potential is very low, air emissions relating to LEV or extraction systems are filtered (e.g. HEPA filter) or passed through wet scrubbers to remove particulates prior to release to atmosphere. Information from facilities indicates that removal efficiency of at least 99% is typical for industry.</p>	<p>Negligible discharge of Cr(VI) in wastewater from the site</p> <p>Air emission abatement: at least 99% efficiency* 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.</p> <p>* When needed, exhaust air is passed through filters or wet scrubbers according to best available technique (minimum efficiency 99 %).</p>	<p>Water: Negligible</p> <p>Air: 0.001 % § †</p> <p>Soil: 0 (no release to soil)</p>	pp. 19-28

§ The 90th percentile value of 3.25E-06 mg Cr(VI)/m³ is used as worst-case estimate of Clocal_{air,ann.}

† The release factor was estimated using default from ERC6b (0.1%) and applying efficiency of air abatement of 99%.

Table 2: CTAC ES – Worker Contributing Scenarios

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
Exposure Scenario (ES) on Delivery and Storage (Uses 2, 4-6) (GPS D1)	Task: Delivery and storage of raw material (PROC 1) (WCS 1)	General ventilation: Basic (1-3 ACH)	Duration of activity: < 8 hours Occupational Health and Safety Management System: Advanced Training and supervision: All persons with access to the storage areas must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times. Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” Hence, static air measurement could be available for the storage area to demonstrate absence of emission.	<ul style="list-style-type: none"> • Protective eye goggles • Protective gloves • Safety shoes • Acid-resistant clothing 	Concentration of Cr(VI): < 50% Place of use: Indoor	p. 28

<p>Exposure Scenario (ES) on Decanting, Mixing & Re-Filling (Use 4-6) (GPS D3)</p>	<p>Task 1: Decanting of liquids (PROC 8b) (WCS 2)</p> <p>Task 2: Decanting and weighing of solids (PROC 8b) (WCS 3)</p> <p>Task 3: Mixing – Liquids (PROC 5) (WCS 4)</p> <p>Task 4: Mixing – Solids (PROC 5) (WCS 5)</p> <p>Task 5: Re-filling of baths – Liquids (PROC 8b) (WCS 6)</p> <p>Task 6: Re-filling of baths – Solids (PROC 8b) (WCS 7)</p>	<p>Ventilation rate: Only good natural ventilation</p> <p>Localised controls: Task 1: Primary: Medium level containment (99.00 % reduction) The material transfer is enclosed with the receiving vessel being docked or sealed to the source vessel.</p> <p>Task 2: Primary: No localized controls (0.0 % reduction); In most cases, this activity is conducted under LEV. However, this has not been considered in this exposure assessment.</p> <p>Tasks 3, 4: Primary: Low level containment (90.00 % reduction)</p> <p>Tasks 5, 6: Primary: Fixed capturing hood (90.00 % reduction)</p> <p>Containment: Task 2, 4: Handling that reduces contact between product and adjacent air.</p>	<p>Duration of activity: Tasks 1, 2, 3, 4: < 60 min Tasks 5, 6: < 10 min</p> <p>Training and supervision: All persons with access to chromium trioxide must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times.</p> <p>Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of</p> <ul style="list-style-type: none"> “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; the operational conditions and risk management measures typical for each of those tasks; the number of workers potentially exposed;” <p>Tasks 1-4: Hence, a typical worker exposure monitoring program could include collection of 1 (or 2) personal measurement(s) during the re-adjustment work. Static measurement might also be appropriate.</p> <p>Tasks 5, 6: Hence, a typical worker exposure monitoring program could include collection of 1 (or 2) personal measurement(s) during the re-adjustment work. Static measurement might also be appropriate.</p>	<p>Tasks 1-6:</p> <ul style="list-style-type: none"> Protective eye goggles. Protective gloves. Acid-resistant clothing / footwear. <p>Task 2, 4, 6:</p> <ul style="list-style-type: none"> Respiratory protection: <ul style="list-style-type: none"> RPE with P3 filter <i>Yes [Respirator with APF 30] [Effectiveness Inhal: 96.67%]: When handling solid chromium trioxide, at least half-mask with P3 filter (APF 30 according to German BG rule 190) is worn</i> <p>Task 5:</p> <ul style="list-style-type: none"> Respiratory protection: <ul style="list-style-type: none"> In the rare case of refilling of a closed, extracted spray bath for spray etching of copper – an essential step in the manufacturing process of screens with specific three-dimensional indentations – , full-face-mask with A2P3 filter (minimum APF 400) is required. <p>Task 6:</p> <ul style="list-style-type: none"> Face mask in case of splashing risk 	<p>Concentration of Cr(VI): Tasks 1, 3, 5: 10 – 50%</p> <p>Powder weight fraction [Cr(VI)]: Tasks 2, 4, 6: 10 – 50%</p> <p>Work area: Indoor</p>	<p>pp. 29/30</p> <p>pp. 30/31</p> <p>p. 32</p> <p>pp. 33/34</p> <p>p. 35</p> <p>pp. 36/37</p>
<p>Exposure Scenario (ES) on Decanting & Mixing for Spray Applications</p>	<p>Task 1: Decanting of liquids (PROC 8b) (WCS 2)</p> <p>Task 2:</p>	<p>Ventilation rate: Only good natural ventilation</p>	<p>Duration of activity: < 30 min</p> <p>Training and supervision:</p>	<ul style="list-style-type: none"> Protective gloves Acid-resistant clothing / footwear Respiratory protection: <ul style="list-style-type: none"> Full-face mask with A2P3 filter (minimum APF 400) 	<p>Concentration of Cr(VI): 10 – 50%</p> <p>Work area:</p>	<p>pp. 29/30</p> <p>p. 32</p>

<p>(Use 4 & 5) (GPS D3)</p>	<p>Mixing – Liquids (PROC 5) (WCS 4)</p>	<p>Localised controls: Primary: Other LEV systems (50.00 % reduction)</p> <p>Task 1: Secondary: Medium level containment (99.00 % reduction) 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.</p> <p>The material transfer is enclosed with the receiving vessel being docked or sealed to the source vessel.</p> <p>Task 2: Secondary: Low level containment (90.00 % reduction) 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.</p> <p>The process is contained with a loose lid or cover, which is not air</p>	<p>All persons with access to chromium trioxide must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times.</p> <p>Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of</p> <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” <p>Hence, static air measurement could be performed to demonstrate absence of emission.</p>	<ul style="list-style-type: none"> • <i>Yes [Full-face mask with A2P3 filter] [minimum: APF 400; Effectiveness Inhal: 99.75%]</i> 	<p>Indoor</p>	
-------------------------------------	--	---	---	--	---------------	--

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
		tight. This includes tapping molten metal through covered launders and placing a loose lid on a ladle.				

<p>Exposure Scenario (ES) on Other Surface Treatment (Uses 4 & 5) (GPS C1, D4, D5)</p>	<p>Task 1: Other surface treatment – Loading and unloading of jigs (PROC 4) (for all tasks: WCS 8-15)</p> <p>Task 2: Other surface treatment in open tanks or baths (e.g. passivation, conversion coating, anodize seal) without electric current (PROC 13) (for all tasks: WCS 8-15)</p> <p>Task 3: Maintenance of equipment (PROC 8a) (for all tasks: WCS 8-15)</p>	<p>General ventilation: Basic (1-3 ACH)</p> <p>Local exhaust ventilation: Task 2: LEV is provided *; <i>Yes, if Cr(VI) or other dangerous substances are used in the pre-treatment</i></p> <p>* LEV may not be necessary for activities, including passivation as the final process step in batch galvanizing, where the transfer of parts to and from the bath is automated such that workers are not required to carry out activities close to the bath and the concentration of CrVI in the bath is <0.2 wt.%.</p>	<p>Duration of activity: Tasks 1, 2: < 8 hours Task 3: < 60 min</p> <p>Occupational Health and Safety Management System: Advanced</p> <p>Training and supervision: Task 1: Apart from the general training requirements and supervision conditions implemented by each individual employer, no additional training and supervision terms have been defined in the authorization conditions by the EC.</p> <p>Task 2: All persons with access to the treatment process must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times.</p> <p>Task 3: All persons with access to the plating line must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment.</p> <p>Monitoring: Task 1: Direct exposure to CrVI is not possible from the un-plated or cleaned and chrome-plated products. Secondary exposure is possible from the chrome baths in the vicinity (far-field exposure). Tasks 1-3: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of</p> <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” 	<p>Task 1:</p> <ul style="list-style-type: none"> • No specific PPE apart from safety shoes and gloves are usually required during loading and unloading. <p>Task 2:</p> <ul style="list-style-type: none"> • Protective eye goggles. • Protective gloves. • Acid-resistant clothing / footwear. <p>Task 3:</p> <ul style="list-style-type: none"> • Protective eye goggles. • Protective gloves. • Acid-resistant clothing / footwear. • Face mask/visor in case of splashing risk. • Respiratory protection: <ul style="list-style-type: none"> • P3 filter (mandatory for encapsulated open tank process lines, recommended for other process lines). 	<p>Concentration of Cr(VI): 10 – 50%</p> <p>Place of use: Indoor</p>	<p>pp. 38 – 43</p>
--	--	--	--	---	--	--------------------

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
			<p>Task 1: Hence, a typical worker exposure monitoring program for loading/unloading operations could involve personal monitoring but static air monitoring may also be appropriate.</p> <p>Task 2: Hence, a typical worker exposure monitoring program could include personal monitoring during a normal production cycle. Static measurement at the treatment line during a normal production cycle may also be appropriate.</p> <p>Task 3: Hence, a typical worker exposure monitoring program could include collection of 1 (or 2) personal measurement(s) during the maintenance work. This scenario also covers infrequent maintenance activities with longer duration.</p>			

<p>Exposure Scenario (ES) on Chromic Acid Anodizing Operations in an Open Tank (Manual Loading & with Electrical Current) (Uses 4 & 5) (GPS C7, D4, D5)</p>	<p>Task 1: Other surface treatment – Loading and unloading of jigs (PROC 4) (for all tasks: WCS 8-15)</p> <p>Task 2: Chromic acid anodizing operations in an open tank with manual loading to bath with electric current (PROC 10) (for all tasks: WCS 8-15)</p> <p>Task 3: Maintenance of equipment (PROC 8a) (for all tasks: WCS 8-15)</p>	<p>General ventilation: Basic (1-3 ACH)</p> <p>Local exhaust ventilation: Task 2: Continuous fixed LEV removes chromium trioxide mist from above the tank(s).</p>	<p>Duration of activity: Tasks 1, 2: < 8 hours Task 3: < 60 min</p> <p>Occupational Health and Safety Management System: Advanced</p> <p>Training and supervision: Task 1: Apart from the general training requirements and supervision conditions implemented by each individual employer, no additional training and supervision terms have been defined in the authorization conditions by the EC.</p> <p>Task 2: All persons with access to the treatment line must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times.</p> <p>Task 3: All persons with access to the plating line must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment.</p> <p>Monitoring: Task 1: Direct exposure to CrVI is not possible from the un-plated or cleaned and chrome-plated products. Secondary exposure is possible from the chrome baths in the vicinity (far-field exposure). Tasks 1-3: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of</p> <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” 	<p>Task 1:</p> <ul style="list-style-type: none"> • No specific PPE apart from safety shoes and gloves are usually required during loading and unloading. <p>Task 2:</p> <ul style="list-style-type: none"> • Protective eye goggles or face shield. • Protective gloves. • Acid-resistant clothing/footwear. • Respiratory protection: <ul style="list-style-type: none"> • RPE with P3 filter might also be appropriate depending on the measured exposure level. <p>Task 3:</p> <ul style="list-style-type: none"> • Protective eye goggles. • Protective gloves. • Acid-resistant clothing / footwear. • Face mask/visor in case of splashing risk. • Respiratory protection: <ul style="list-style-type: none"> • P3 filter (mandatory for encapsulated open tank process lines, recommended for other process lines). 	<p>Concentration of Cr(VI): 10 – 50%</p> <p>Place of use: Indoor</p>	<p>pp. 38 – 43</p>
---	---	---	---	---	--	--------------------

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
			<p>Task 1: Hence, a typical worker exposure monitoring program for loading/unloading operations could involve personal monitoring but static air monitoring may also be appropriate.</p> <p>Task 2: Hence, a typical worker exposure monitoring could involve personal monitoring of employees with access to the treatment line. Static air monitoring may also be appropriate.</p> <p>Task 3: Hence, a typical worker exposure monitoring program could include collection of 1 (or 2) personal measurement(s) during the maintenance work. This scenario also covers infrequent maintenance activities with longer duration.</p>			

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
Exposure Scenario (ES) on Surface treatment with CrO ₃ by spray application in a spray booth/cabin (Uses 4 & 5) (GPS C2, C3, D4, D5)	Task: Surface treatment by spraying in spray cabin/spray booth (PROC 7) (WCS 16)	Localised controls: Primary: Fixed capturing hood (90.00 % reduction) Work area: Down-flow spray room (80.00 % reduction)	Duration of activity: < 30 min Training and supervision: All persons with access to the spray cabin must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times. Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” Hence, a typical worker exposure monitoring program for spray application in a cabin could include personal monitoring during the spray activity. Static measurement outside of the cabin during spraying may support risk assessment.	<ul style="list-style-type: none"> • Protective gloves • Acid-resistant clothing / footwear • Respiratory protection: <ul style="list-style-type: none"> • Full-face mask with A2P3 filter (minimum APF 400) • <i>Yes [Full-face mask with A2P3 filter] [minimum: APF 400; Effectiveness Inhal: 99.75%]</i> 	Concentration of Cr(VI): 1 – 5 % Work area: Spray room (Down-flow spray room (80.00 % reduction))	pp. 44/45

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
Exposure Scenario (ES) on Surface Treatment with CrO3 by Spraying in Closed, Extracted Spray Bath (Uses 4 & 5) (GPS D4, D5)	Task: Surface treatment by spraying in closed, extracted spray bath (PROC 7) (WCS 19)	Ventilation rate: 3 ACH Localised controls: Primary: Medium level containment (99.00 % reduction) Secondary: Fume cupboard (99% reduction)	Duration of activity: < 10 min Training and supervision: All persons carrying out these operations must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of <ul style="list-style-type: none"> “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; the operational conditions and risk management measures typical for each of those tasks; the number of workers potentially exposed;” Hence, a typical worker exposure monitoring program for surface treatment by spraying in closed, extracted spray bath could include personal monitoring during a normal production cycle. Static measurement at the bath during a normal production cycle may support risk assessment.	<ul style="list-style-type: none"> Protective eye goggles. Protective gloves. Acid-resistant clothing. Respiratory protection: <ul style="list-style-type: none"> RPE with P3 filter (APF 400) Yes [<i>Respirator with APF 400</i>] [<i>Effectiveness Inhal: 99.75%</i>]; <i>During spray etching full-face-mask with A2P3 filter (minimum APF 400 according to German BG rule 190) is worn</i> 	Concentration of Cr(VI): < 15 % Work area: Indoors (Large workrooms only)	pp. 49/50

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
Exposure Scenario (ES) on ES on Surface Treatment with CrO3 by Spraying Outside of Spray Booth (Uses 4 & 5) (GPS C4, D4, D5)	Task: Surface treatment by spraying outside of spray booth (PROC 7) (WCS 17)	Ventilation rate: Only good natural ventilation Local exhaust ventilation: LEV is provided to efficiently remove chromium trioxide from area	Duration of activity: < 30 min Training and supervision: All persons with access to the spray area must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times. Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” Hence, a typical worker exposure monitoring program could include personal monitoring during the spray activity. Static measurement may support risk assessment.	<ul style="list-style-type: none"> • Protective gloves. • Acid-resistant clothing / footwear. • Respiratory protection: <ul style="list-style-type: none"> • Full-face mask with P3 filter or air-fed respirator. • <i>Yes [Respirator with APF 400] [Effectiveness Inhal: 99.75%]; When spraying outside spray booth full-face-mask with A2P3 filter (minimum APF 400 according to German BG rule 190) is worn</i> 	Concentration of Cr(VI): 1 - 5 % Work area: Indoors (Large workrooms only)	p. 46

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
Exposure Scenario (ES) on ES on Surface Treatment with CrO3 by Touch-Up with a Pen (Uses 4 & 5) (GPS C5)	Task: Surface treatment by brushing or penstick (Small areas/touch-up) (PROC 10) (WCS 21)	Ventilation rate: Only good natural ventilation	Duration of activity: < 180 min Training and supervision: All persons carrying out these operations must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” Hence, a typical worker exposure monitoring program could include personal monitoring during a normal production cycle.	<ul style="list-style-type: none"> • Protective eye goggles. • Protective gloves. • Acid-resistant clothing. 	Concentration of Cr(VI): 1 - 5 % Work area: Indoors/Outdoors	p. 52

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
Exposure Scenario (ES) on Surface Treatment with CrO3 by Touch-Up with Brush (with Electrical Current) (Uses 4 & 5) (GPS C8)	Task: Surface treatment by brushing/rolling (small to medium sized areas) (PROC 10) (WCS 20)	Ventilation rate: Only good natural ventilation Localised controls: Specific local ventilation must be established in order to control the exposure risks of operators at these work stations; <i>Primary: Fixed capturing hood (90.00 % reduction)</i>	Duration of activity: < 180 min Training and supervision: All persons carrying out these operations must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of <ul style="list-style-type: none"> “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; the operational conditions and risk management measures typical for each of those tasks; the number of workers potentially exposed;” Hence, a typical worker exposure monitoring program could include personal monitoring during a normal production cycle. For the purpose of the exposure assessment, it has been assumed that it will be carried out 3 h/day every day.	<ul style="list-style-type: none"> Protective eye goggles. Protective gloves. Acid-resistant clothing. Respiratory protection: <ul style="list-style-type: none"> RPE with P3 filter. <i>Yes [APF 30] [Effectiveness Inhal: 96.67%]; When brushing medium sized parts at least half-mask with A2P3 filter (APF 30 according to German BG rule 190) is worn</i> 	Concentration of Cr(VI): 5 - 10 % Work area: Indoors	pp. 50/51

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
Exposure Scenario (ES) on Surface treatment with CrO3 by touch-up with brush (without electrical current) (Uses 4 & 5) (GPS #####)	Task: Surface treatment by brushing/rolling (small to medium sized areas) (PROC 10) (WCS 20)	Ventilation rate: Only good natural ventilation Localised controls: Specific local ventilation must be established in order to control the exposure risks of operators at these work stations; <i>Primary: Fixed capturing hood (90.00 % reduction)</i>	Duration of activity: < 180 min Training and supervision: All persons carrying out these operations must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” Hence, a typical worker exposure monitoring program could include personal monitoring during a normal production cycle. For the purpose of the exposure assessment, it has been assumed that it will be carried out 3 h/day every day.	<ul style="list-style-type: none"> • Protective eye goggles. • Protective gloves. • Acid-resistant clothing. • Respiratory protection: <ul style="list-style-type: none"> • RPE with APF 30 • Yes [APF 30] <i>[Effectiveness Inhal: 96.67%]; When brushing medium sized parts at least half-mask with A2P3 filter (APF 30 according to German BG rule 190) is worn</i> 	Concentration of Cr(VI): 5 - 10 % Work area: Indoors	pp. 50/51

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
Exposure Scenario (ES) on Surface treatment with CrO3 in automatic spray tunnel/cabin (Uses 4 & 5) (GPS C2, D4, D5)	Task: Surface treatment in automatic spray tunnel/cabin (PROC 7) (WCS 18)	Ventilation rate: Only good natural ventilation Localised controls: Primary: Medium level containment (99.00 % reduction) Secondary: Other enclosing hoods (90.00 % reduction)	Duration of activity: < 480 min Training and supervision: All persons with access to the spray tunnel/cabin must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times. Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” Hence, a typical worker exposure monitoring program could include personal monitoring during a normal production cycle. Static measurement at the spray tunnel/cabin during a normal production cycle may support risk assessment.	<ul style="list-style-type: none"> • Protective eye goggles. • Protective gloves. • Acid-resistant clothing / footwear 	Concentration of Cr(VI): 0.1 – 0.5 % Work area: Indoors	pp. 47/48

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
Exposure Scenario (ES) on Drying (Use 4 & 5) (GPS #####)	Task 1: Drying/self-curing (PROC 26) (WCS 22) Task 2: Drying/heat-curing (PROC 26) (WCS 23)	Ventilation rate: Only good natural ventilation Localised controls: Task 2: Primary: Fixed capturing hood (90.00 % reduction)	Duration of activity: Task 1 – Activities of workers within one meter distance to the drying part: < 30 min Task 1 – Activities of workers outside of one meter distance to the drying part: < 90 min Task 2: < 480 min Training and supervision: All persons carrying out these operations must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” Exposure potential is negligible. No measurements seem to be required.		Concentration of Cr(VI): 5 – 10 % Work area: Indoors	pp. 53/54 pp. 55/56

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
Exposure Scenario (ES) on Cleaning (Use 4 & 5) (GPS #####)	<p>Task 1: Cleaning of equipment – Tools cleaning (closed system) (PROC 8b) (WCS 24)</p> <p>Task 2: Cleaning and maintenance of equipment – Tools cleaning (spray cabin) (PROC 8b) (WCS 25)</p> <p>Task 3: Cleaning – Spray cabin and ancillary areas (PROC 8b) (WCS 26)</p>	<p>Ventilation rate: Tasks 1, 3: Only good natural ventilation</p> <p>Task 2: Specialised room ventilation with more than 10 ACH</p> <p>Localised controls: Task 1: Primary: Fixed capturing hood (90.00 % reduction)</p>	<p>Duration of activity: < 15 min</p> <p>Training and supervision: All persons carrying out these operations must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed.</p> <p>Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements.</p> <p>According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of</p> <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” <p>Task 1: Hence, a typical worker exposure monitoring program for cleaning operations could involve static air monitoring.</p> <p>Tasks 2, 3: Hence, personal monitoring could be conducted during cleaning.</p>	<ul style="list-style-type: none"> • Protective gloves • Acid-resistant clothing • Respiratory protection: <ul style="list-style-type: none"> • Full-face-mask with A2P3 filter (minimum APF 400) • <i>Yes [Full-face mask with A2P3 filter]; [Minimum: APF 400; Effectiveness: 99.75%]</i> 	<p>Concentration of Cr(VI): 5 – 10 %</p> <p>Work area: Indoors</p>	<p>pp. 56/57</p> <p>p. 58</p> <p>pp. 59/60</p>

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
Exposure Scenario (ES) on Infrequent maintenance (Use 4-6) (GPS D4, D5)	Task: Infrequent maintenance activities (PROC 8a) (WCS 27)	Ventilation rate: Only good natural ventilation	Duration of activity: 240 min Training and supervision: All maintenance persons with access to the equipment must be instructed in the risks from working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times. Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” Hence, a typical worker exposure monitoring program could include collection of 1 (or 2) personal measurement(s) during the maintenance work.	<ul style="list-style-type: none"> • Protective eye goggles • Face mask in case of splashing risk • Protective gloves • Acid-resistant clothing / footwear • Respiratory protection: <ul style="list-style-type: none"> • RPE with P3 filter • <i>Yes [Respirator with APF 30] [Effectiveness Inhal: 96.67%]; During maintenance activities at least half-mask with A2P3 filter (APF 30 according to German BG rule 190) is worn</i> 	Powder weight fraction [Cr(VI)]: 5 – 10 % Work area: Indoors	p. 61

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
Exposure Scenario (ES) on Sampling (Uses 1, 2, 4-6) (GPS D2)	Task: Sampling (PROC 15) (WCS 28)	Ventilation rate: Only good natural ventilation Localised controls: Primary: Fixed capturing hood (90.00 % reduction)	Duration of activity: < 30 min Training and supervision: All persons with access to operations for sampling must be instructed in the risks from working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” Hence, a typical worker exposure monitoring program for sampling could include collection of 1 personal measurement during the sampling of chromium trioxide during a normal production cycle. Static measurement might also be appropriate.	<ul style="list-style-type: none"> • Protective eye goggles • Protective gloves • Acid-resistant clothing / footwear 	Concentration of Cr(VI) in mixture: 10-50 % Work area: Indoors	pp. 62/63

<p>Exposure Scenario (ES) on Machining (Use 4 & 5) (GPS ####)</p>	<p>Task 1: Machining operations on small to medium sized parts containing Cr(VI) on an extracted bench/extraction booth including cleaning (PROC 21, 24) (WCS 29)</p> <p>Task 2: Machining operations on small to medium sized surfaces containing Cr(VI) on an extracted bench/extraction booth including cleaning (PROC 21, 24) (WCS 30)</p> <p>Task 3: Machining operations in large work areas on parts containing Cr(VI) including cleaning (PROC 21, 24) (WCS 31)</p> <p>Task 4: Machining operations in large work areas on surfaces containing Cr(VI) including cleaning (PROC 21, 24) (WCS 32)</p> <p>Task 5: Machining operations on parts containing Cr(VI) in small work areas including cleaning</p>	<p>Ventilation rate: Only good natural ventilation</p> <p>Localised controls: Tasks 1, 2: Primary: Fixed capturing hood /Vacuum cleaner (HEPA filter with at least 99.00 % reduction)</p> <p>Tasks 3, 4: Primary: Wetting at the point of release/on-tool extraction (90.00 % reduction)/ vacuum cleaning</p>	<p>Duration of activity: Tasks 1, 2: < 180 min</p> <p>Tasks 3, 4, 5, 6: < 60 min</p> <p>Training and supervision: All persons conducting machining operations must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times.</p> <p>Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of</p> <ul style="list-style-type: none"> “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; the operational conditions and risk management measures typical for each of those tasks; the number of workers potentially exposed;” <p>Hence, a typical worker exposure monitoring program could include collection of 1 (or 2) personal measurement(s) during machining work.</p>	<ul style="list-style-type: none"> Protective eye goggles Protective gloves Acid-resistant clothing <ul style="list-style-type: none"> Tasks 1, 3: Respiratory protection: <ul style="list-style-type: none"> RPE with P2 filter <i>Yes [Respirator with APF 10] [Effectiveness Inhal: 90%]; At least half or quarter mask with P2 filter (APF 10 according to German BG rule 190) is worn if workplace monitoring data do not confirm negligible exposure clearly below 1 µg/m³ (e.g. < 0.1 µg/m³)</i> Task 2: Respiratory protection: <ul style="list-style-type: none"> RPE with P3 filter <i>Yes [Respirator with APF 30] [Effectiveness Inhal: 96.67 %]; At least half-mask with P3 filter (APF 30 according to German BG rule 190) is worn if workplace monitoring data do not confirm negligible exposure clearly below 1 µg/m³ (e.g. < 0.1 µg/m³)</i> Task 4: Respiratory protection <ul style="list-style-type: none"> RPE with P3 filter <i>Yes [Respirator with APF 30] [Effectiveness Inhal: 96.67%]; At least half-mask with P3 filter (APF 30 according to German BG rule 190) is worn</i> Task 5: Respiratory protection 	<p>Solid weight fraction: Tasks 1, 3, 5: < 0.1 %</p> <p>Task 2, 4, 6: < 3 %</p> <p>Work area: Indoors</p>	<p>pp. 64/65</p> <p>pp. 66/67</p> <p>pp. 67/68</p> <p>pp. 69/70</p> <p>p. 71</p> <p>pp. 72/73</p>
---	--	---	--	---	---	---

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
	(PROC 21, 24) (WCS 33) Task 6: Machining operations on surfaces containing Cr(VI) in small work areas including cleaning (PROC 21, 24) (WCS 34)			<ul style="list-style-type: none"> • Full-face mask with P3 filter • <i>Yes [Respirator with APF 400] [Effectiveness Inhal: 96.75%]; Full face mask with P3 filter (APF 400 according to German BG rule 190) is worn</i> • Task 6: Respiratory protection <ul style="list-style-type: none"> • Full-face mask with P3 filter and air supply. • <i>Yes [Respirator with APF 1000] [Effectiveness Inhal: 99.9%]; Full face mask with P3 filter and air supply (APF 1000 according to German BG rule 190) is worn</i> 		

<p>Exposure Scenario (ES) on Waste and Wastewater management (Use 1, 2, 4-6) (GPS D7)</p>	<p>Task: Waste and wastewater management (PROC 8b) (WCS 36)</p>	<p>Ventilation rate: Only good natural ventilation</p> <p>Localised controls: 1. Process waste: Primary: Low level containment (90.00 % reduction)</p>	<p>Duration of activity: 1. Process waste: < 30 min 2. Wastewater treatment: < 10 min</p> <p>Training and supervision: 1. Process waste: All persons with access to the waste storage area must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times. 2. Wastewater treatment: All persons with access to the wastewater treatment plant must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times.</p> <p>Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of</p> <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” <p>1. Process waste: Hence, depending on exposure potential, personal air measurement could be available to demonstrate absence of emission. 2. Wastewater treatment: Hence, a typical worker exposure monitoring program could include collection of a static measurement at the wastewater treatment plant. Personal monitoring may not be necessary.</p>	<p>1. Process waste:</p> <ul style="list-style-type: none"> • Respiratory protection: <ul style="list-style-type: none"> • RPE with P3 filter when potential to exposure to airborne Cr(VI) • <i>Yes [Respirator with APF 30] [Effectiveness Inhal: 96.67%]; During waste transfer activities with potential to exposure to airborne Cr(VI) at least half-mask with P3 filter (APF 30 according to German BG rule 190) is worn</i> <p>2. Wastewater treatment:</p> <ul style="list-style-type: none"> • Protective eye goggles • Protective Gloves • Acid-resistant clothing / footwear 	<p>Powder weight fraction [Cr(VI)]: 1. Process waste: 10-50 %</p> <p>Concentration of Cr(VI) in mixture: 2. Wastewater treatment: Minute</p> <p>Work area: Indoors</p>	<p>pp. 74/75</p>
---	--	--	--	--	---	------------------

Succinct Summary of Representative Risk Management Measures (RMMs) and Operational Conditions (OCs)

Legal name of applicant(s): *Chemservice GmbH; Atotech Deutschland GmbH; Boeing Distribution Inc.; Prospere Chemical Logistic OÜ; CROMITAL S.P.A.; Elementis Chromium LLP; MacDermid Enthone GmbH*

Submitted by: *Chemservice GmbH in its legal capacity as Only Representative of Brother CISA (Pty) Ltd.*

Substance: *chromium trioxide, EC Number: 215-607-8, CAS Number: 1333-82-0*

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

Use number: *Use 5*

June 2021

IMPORTANT: This document was initially prepared with reference to the Chemical Safety Report (CSR) prepared as part of the Application for Authorisation. It has since been revised to reflect amendments to the Exposure Scenarios, required as a condition of the Authorisation. In this document, some but not all WCS of the CSR are indicated for reference purposes. The relevant page in the CSR is also referenced; however, authorities should refer to the amended Exposure Scenarios as attached to the SDS for a complete discussion of the RMMs and OCs.

Table 1: CTAC ES – Environmental Contributing Scenarios

CTAC ES and use	Task (ERC/spERC)	Tonnage	Technical RMMs	Effectiveness of waste water and waste air treatment (for ERC)	Release factors: water, air and soil (for ERC)	Original info in CSR on page(s)
<p>Exposure Scenario (ES) on Use at Industrial Site – Other Surface Treatment (Environmental Contributing Scenario) (Uses 4 & 5) (GPS E3bis)</p>	<p>Task: Other surface treatment (ERC 6b) (ECS 1)</p>	<p>500 [as Cr(VI)]</p>	<p>All solid and any liquid waste is collected and either the collected waste is directly forwarded to an external waste management company, or Cr(VI) in wastewater is reduced to Cr(III) on-site, or treated by vacuum evaporation, and the treated waste is either recycled or forwarded to an external waste management company (licenced contractor) for disposal as hazardous waste</p> <p>Except in case of very low content of Cr(VI) during occasional release (e.g. infrequent surface treatment using small quantities of Cr(VI) where exposure potential is very low, air emissions relating to LEV or extraction systems are filtered (e.g. HEPA filter) or passed through wet scrubbers to remove particulates prior to release to atmosphere. Information from facilities indicates that removal efficiency of at least 99% is typical for industry.</p>	<p>Negligible discharge of Cr(VI) in wastewater from the site</p> <p>Air emission abatement: at least 99% efficiency* 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.</p> <p>* When needed, exhaust air is passed through filters or wet scrubbers according to best available technique (minimum efficiency 99 %).</p>	<p>Water: Negligible</p> <p>Air: 0.001 % § †</p> <p>Soil: 0 (no release to soil)</p>	<p>pp. 19-28</p>

§ The 90th percentile value of 3.25E-06 mg Cr(VI)/m³ is used as worst-case estimate of Clocal_{air,ann}.

† The release factor was estimated using default from ERC6b (0.1%) and applying efficiency of air abatement of 99%.

Table 2: CTAC ES – Worker Contributing Scenarios

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
Exposure Scenario (ES) on Delivery and Storage (Uses 2, 4-6) (GPS D1)	Task: Delivery and storage of raw material (PROC 1) (WCS 1)	General ventilation: Basic (1-3 ACH)	Duration of activity: < 8 hours Occupational Health and Safety Management System: Advanced Training and supervision: All persons with access to the storage areas must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times. Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” Hence, static air measurement could be available for the storage area to demonstrate absence of emission.	<ul style="list-style-type: none"> • Protective eye goggles • Protective gloves • Safety shoes • Acid-resistant clothing 	Concentration of Cr(VI): < 50% Place of use: Indoor	p. 28

<p>Exposure Scenario (ES) on Decanting, Mixing & Re-Filling (Use 4-6) (GPS D3)</p>	<p>Task 1: Decanting of liquids (PROC 8b) (WCS 2)</p> <p>Task 2: Decanting and weighing of solids (PROC 8b) (WCS 3)</p> <p>Task 3: Mixing – Liquids (PROC 5) (WCS 4)</p> <p>Task 4: Mixing – Solids (PROC 5) (WCS 5)</p> <p>Task 5: Re-filling of baths – Liquids (PROC 8b) (WCS 6)</p> <p>Task 6: Re-filling of baths – Solids (PROC 8b) (WCS 7)</p>	<p>Ventilation rate: Only good natural ventilation</p> <p>Localised controls: Task 1: Primary: Medium level containment (99.00 % reduction) The material transfer is enclosed with the receiving vessel being docked or sealed to the source vessel.</p> <p>Task 2: Primary: No localized controls (0.0 % reduction); In most cases, this activity is conducted under LEV. However, this has not been considered in this exposure assessment.</p> <p>Tasks 3, 4: Primary: Low level containment (90.00 % reduction)</p> <p>Tasks 5, 6: Primary: Fixed capturing hood (90.00 % reduction)</p> <p>Containment: Task 2, 4: Handling that reduces contact between product and adjacent air.</p>	<p>Duration of activity: Tasks 1, 2, 3, 4: < 60 min Tasks 5, 6: < 10 min</p> <p>Training and supervision: All persons with access to chromium trioxide must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times.</p> <p>Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of</p> <ul style="list-style-type: none"> “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; the operational conditions and risk management measures typical for each of those tasks; the number of workers potentially exposed;” <p>Tasks 1-4: Hence, a typical worker exposure monitoring program could include collection of 1 (or 2) personal measurement(s) during the re-adjustment work. Static measurement might also be appropriate.</p> <p>Tasks 5, 6: Hence, a typical worker exposure monitoring program could include collection of 1 (or 2) personal measurement(s) during the re-adjustment work. Static measurement might also be appropriate.</p>	<p>Tasks 1-6:</p> <ul style="list-style-type: none"> Protective eye goggles. Protective gloves. Acid-resistant clothing / footwear. <p>Task 2, 4, 6:</p> <ul style="list-style-type: none"> Respiratory protection: <ul style="list-style-type: none"> RPE with P3 filter <i>Yes [Respirator with APF 30] [Effectiveness Inhal: 96.67%]; When handling solid chromium trioxide, at least half-mask with P3 filter (APF 30 according to German BG rule 190) is worn</i> <p>Task 5:</p> <ul style="list-style-type: none"> Respiratory protection: <ul style="list-style-type: none"> In the rare case of refilling of a closed, extracted spray bath for spray etching of copper – an essential step in the manufacturing process of screens with specific three-dimensional indentations – , full-face-mask with A2P3 filter (minimum APF 400) is required. <p>Task 6:</p> <ul style="list-style-type: none"> Face mask in case of splashing risk 	<p>Concentration of Cr(VI): Tasks 1, 3, 5: 10 – 50%</p> <p>Powder weight fraction [Cr(VI)]: Tasks 2, 4, 6: 10 – 50%</p> <p>Work area: Indoor</p>	<p>pp. 29/30</p> <p>pp. 30/31</p> <p>p. 32</p> <p>pp. 33/34</p> <p>p. 35</p> <p>pp. 36/37</p>
<p>Exposure Scenario (ES) on Decanting & Mixing for Spray Applications</p>	<p>Task 1: Decanting of liquids (PROC 8b) (WCS 2)</p> <p>Task 2:</p>	<p>Ventilation rate: Only good natural ventilation</p>	<p>Duration of activity: < 30 min</p> <p>Training and supervision:</p>	<ul style="list-style-type: none"> Protective gloves Acid-resistant clothing / footwear Respiratory protection: <ul style="list-style-type: none"> Full-face mask with A2P3 filter (minimum APF 400) 	<p>Concentration of Cr(VI): 10 – 50%</p> <p>Work area:</p>	<p>pp. 29/30</p> <p>p. 32</p>

<p>(Use 4 & 5) (GPS D3)</p>	<p>Mixing – Liquids (PROC 5) (WCS 4)</p>	<p>Localised controls: Primary: Other LEV systems (50.00 % reduction)</p> <p>Task 1: Secondary: Medium level containment (99.00 % reduction) 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.</p> <p>The material transfer is enclosed with the receiving vessel being docked or sealed to the source vessel.</p> <p>Task 2: Secondary: Low level containment (90.00 % reduction) 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.</p> <p>The process is contained with a loose lid or cover, which is not air</p>	<p>All persons with access to chromium trioxide must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times.</p> <p>Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of</p> <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” <p>Hence, static air measurement could be performed to demonstrate absence of emission.</p>	<ul style="list-style-type: none"> • <i>Yes [Full-face mask with A2P3 filter] [minimum: APF 400; Effectiveness Inhal: 99.75%]</i> 	<p>Indoor</p>	
-------------------------------------	--	---	---	--	---------------	--

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
		tight. This includes tapping molten metal through covered launders and placing a loose lid on a ladle.				

<p>Exposure Scenario (ES) on Other Surface Treatment (Uses 4 & 5) (GPS C1, D4, D5)</p>	<p>Task 1: Other surface treatment – Loading and unloading of jigs (PROC 4) (for all tasks: WCS 8-15)</p> <p>Task 2: Other surface treatment in open tanks or baths (e.g. passivation, conversion coating, anodize seal) without electric current (PROC 13) (for all tasks: WCS 8-15)</p> <p>Task 3: Maintenance of equipment (PROC 8a) (for all tasks: WCS 8-15)</p>	<p>General ventilation: Basic (1-3 ACH)</p> <p>Local exhaust ventilation: Task 2: LEV is provided *; <i>Yes, if Cr(VI) or other dangerous substances are used in the pre-treatment</i></p> <p>* LEV may not be necessary for activities, including passivation as the final process step in batch galvanizing, where the transfer of parts to and from the bath is automated such that workers are not required to carry out activities close to the bath and the concentration of CrVI in the bath is <0.2 wt.%.</p>	<p>Duration of activity: Tasks 1, 2: < 8 hours Task 3: < 60 min</p> <p>Occupational Health and Safety Management System: Advanced</p> <p>Training and supervision: Task 1: Apart from the general training requirements and supervision conditions implemented by each individual employer, no additional training and supervision terms have been defined in the authorization conditions by the EC. Task 2: All persons with access to the treatment process must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times. Task 3: All persons with access to the plating line must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment.</p> <p>Monitoring: Task 1: Direct exposure to CrVI is not possible from the un-plated or cleaned and chrome-plated products. Secondary exposure is possible from the chrome baths in the vicinity (far-field exposure). Tasks 1-3: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of</p> <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” 	<p>Task 1:</p> <ul style="list-style-type: none"> • No specific PPE apart from safety shoes and gloves are usually required during loading and unloading. <p>Task 2:</p> <ul style="list-style-type: none"> • Protective eye goggles. • Protective gloves. • Acid-resistant clothing / footwear. <p>Task 3:</p> <ul style="list-style-type: none"> • Protective eye goggles. • Protective gloves. • Acid-resistant clothing / footwear. • Face mask/visor in case of splashing risk. • Respiratory protection: <ul style="list-style-type: none"> • P3 filter (mandatory for encapsulated open tank process lines, recommended for other process lines). 	<p>Concentration of Cr(VI): 10 – 50%</p> <p>Place of use: Indoor</p>	<p>pp. 38 – 43</p>
--	--	--	--	---	--	--------------------

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
			<p>Task 1: Hence, a typical worker exposure monitoring program for loading/unloading operations could involve personal monitoring but static air monitoring may also be appropriate.</p> <p>Task 2: Hence, a typical worker exposure monitoring program could include personal monitoring during a normal production cycle. Static measurement at the treatment line during a normal production cycle may also be appropriate.</p> <p>Task 3: Hence, a typical worker exposure monitoring program could include collection of 1 (or 2) personal measurement(s) during the maintenance work. This scenario also covers infrequent maintenance activities with longer duration.</p>			

<p>Exposure Scenario (ES) on Chromic Acid Anodizing Operations in an Open Tank (Manual Loading & with Electrical Current) (Uses 4 & 5) (GPS C7, D4, D5)</p>	<p>Task 1: Other surface treatment – Loading and unloading of jigs (PROC 4) (for all tasks: WCS 8-15)</p> <p>Task 2: Chromic acid anodizing operations in an open tank with manual loading to bath with electric current (PROC 10) (for all tasks: WCS 8-15)</p> <p>Task 3: Maintenance of equipment (PROC 8a) (for all tasks: WCS 8-15)</p>	<p>General ventilation: Basic (1-3 ACH)</p> <p>Local exhaust ventilation: Task 2: Continuous fixed LEV removes chromium trioxide mist from above the tank(s).</p>	<p>Duration of activity: Tasks 1, 2: < 8 hours Task 3: < 60 min</p> <p>Occupational Health and Safety Management System: Advanced</p> <p>Training and supervision: Task 1: Apart from the general training requirements and supervision conditions implemented by each individual employer, no additional training and supervision terms have been defined in the authorization conditions by the EC. Task 2: All persons with access to the treatment line must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times. Task 3: All persons with access to the plating line must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment.</p> <p>Monitoring: Task 1: Direct exposure to CrVI is not possible from the un-plated or cleaned and chrome-plated products. Secondary exposure is possible from the chrome baths in the vicinity (far-field exposure). Tasks 1-3: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of</p> <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” 	<p>Task 1:</p> <ul style="list-style-type: none"> • No specific PPE apart from safety shoes and gloves are usually required during loading and unloading. <p>Task 2:</p> <ul style="list-style-type: none"> • Protective eye goggles or face shield. • Protective gloves. • Acid-resistant clothing/footwear. • Respiratory protection: <ul style="list-style-type: none"> • RPE with P3 filter might also be appropriate depending on the measured exposure level. <p>Task 3:</p> <ul style="list-style-type: none"> • Protective eye goggles. • Protective gloves. • Acid-resistant clothing / footwear. • Face mask/visor in case of splashing risk. • Respiratory protection: <ul style="list-style-type: none"> • P3 filter (mandatory for encapsulated open tank process lines, recommended for other process lines). 	<p>Concentration of Cr(VI): 10 – 50%</p> <p>Place of use: Indoor</p>	<p>pp. 38 – 43</p>
---	---	---	---	---	--	--------------------

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
			<p>Task 1: Hence, a typical worker exposure monitoring program for loading/unloading operations could involve personal monitoring but static air monitoring may also be appropriate.</p> <p>Task 2: Hence, a typical worker exposure monitoring could involve personal monitoring of employees with access to the treatment line. Static air monitoring may also be appropriate.</p> <p>Task 3: Hence, a typical worker exposure monitoring program could include collection of 1 (or 2) personal measurement(s) during the maintenance work. This scenario also covers infrequent maintenance activities with longer duration.</p>			

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
Exposure Scenario (ES) on Surface treatment with CrO3 by spray application in a spray booth/cabin (Uses 4 & 5) (GPS C2, C3, D4, D5)	Task: Surface treatment by spraying in spray cabin/spray booth (PROC 7) (WCS 16)	Localised controls: Primary: Fixed capturing hood (90.00 % reduction) Work area: Down-flow spray room (80.00 % reduction)	Duration of activity: < 30 min Training and supervision: All persons with access to the spray cabin must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times. Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” Hence, a typical worker exposure monitoring program for spray application in a cabin could include personal monitoring during the spray activity. Static measurement outside of the cabin during spraying may support risk assessment.	<ul style="list-style-type: none"> • Protective gloves • Acid-resistant clothing / footwear • Respiratory protection: <ul style="list-style-type: none"> • Full-face mask with A2P3 filter (minimum APF 400) • <i>Yes [Full-face mask with A2P3 filter] [minimum: APF 400; Effectiveness Inhal: 99.75%]</i> 	Concentration of Cr(VI): 1 – 5 % Work area: Spray room (Down-flow spray room (80.00 % reduction))	pp. 44/45

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
Exposure Scenario (ES) on Surface Treatment with CrO3 by Spraying in Closed, Extracted Spray Bath (Uses 4 & 5) (GPS D4, D5)	Task: Surface treatment by spraying in closed, extracted spray bath (PROC 7) (WCS 19)	Ventilation rate: 3 ACH Localised controls: Primary: Medium level containment (99.00 % reduction) Secondary: Fume cupboard (99% reduction)	Duration of activity: < 10 min Training and supervision: All persons carrying out these operations must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” Hence, a typical worker exposure monitoring program for surface treatment by spraying in closed, extracted spray bath could include personal monitoring during a normal production cycle. Static measurement at the bath during a normal production cycle may support risk assessment.	<ul style="list-style-type: none"> • Protective eye goggles. • Protective gloves. • Acid-resistant clothing. • Respiratory protection: <ul style="list-style-type: none"> • RPE with P3 filter (APF 400) • <i>Yes [Respirator with APF 400] [Effectiveness Inhal: 99.75%]; During spray etching full-face-mask with A2P3 filter (minimum APF 400 according to German BG rule 190) is worn</i> 	Concentration of Cr(VI): < 15 % Work area: Indoors (Large workrooms only)	pp. 49/50

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
Exposure Scenario (ES) on ES on Surface Treatment with CrO3 by Spraying Outside of Spray Booth (Uses 4 & 5) (GPS C4, D4, D5)	Task: Surface treatment by spraying outside of spray booth (PROC 7) (WCS 17)	Ventilation rate: Only good natural ventilation Local exhaust ventilation: LEV is provided to efficiently remove chromium trioxide from area	Duration of activity: < 30 min Training and supervision: All persons with access to the spray area must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times. Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” Hence, a typical worker exposure monitoring program could include personal monitoring during the spray activity. Static measurement may support risk assessment.	<ul style="list-style-type: none"> • Protective gloves. • Acid-resistant clothing / footwear. • Respiratory protection: <ul style="list-style-type: none"> • Full-face mask with P3 filter or air-fed respirator. • <i>Yes [Respirator with APF 400] [Effectiveness Inhal: 99.75%]; When spraying outside spray booth full-face-mask with A2P3 filter (minimum APF 400 according to German BG rule 190) is worn</i> 	Concentration of Cr(VI): 1 - 5 % Work area: Indoors (Large workrooms only)	p. 46

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
Exposure Scenario (ES) on ES on Surface Treatment with CrO3 by Touch-Up with a Pen (Uses 4 & 5) (GPS C5)	Task: Surface treatment by brushing or penstick (Small areas/touch-up) (PROC 10) (WCS 21)	Ventilation rate: Only good natural ventilation	Duration of activity: < 180 min Training and supervision: All persons carrying out these operations must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” Hence, a typical worker exposure monitoring program could include personal monitoring during a normal production cycle.	<ul style="list-style-type: none"> • Protective eye goggles. • Protective gloves. • Acid-resistant clothing. 	Concentration of Cr(VI): 1 - 5 % Work area: Indoors/Outdoors	p. 52

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
Exposure Scenario (ES) on Surface Treatment with CrO3 by Touch-Up with Brush (with Electrical Current) (Uses 4 & 5) (GPS C8)	Task: Surface treatment by brushing/rolling (small to medium sized areas) (PROC 10) (WCS 20)	Ventilation rate: Only good natural ventilation Localised controls: Specific local ventilation must be established in order to control the exposure risks of operators at these work stations; <i>Primary: Fixed capturing hood (90.00 % reduction)</i>	Duration of activity: < 180 min Training and supervision: All persons carrying out these operations must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” Hence, a typical worker exposure monitoring program could include personal monitoring during a normal production cycle. For the purpose of the exposure assessment, it has been assumed that it will be carried out 3 h/day every day.	<ul style="list-style-type: none"> • Protective eye goggles. • Protective gloves. • Acid-resistant clothing. • Respiratory protection: <ul style="list-style-type: none"> • RPE with P3 filter. • <i>Yes [APF 30] [Effectiveness Inhal: 96.67%]; When brushing medium sized parts at least half-mask with A2P3 filter (APF 30 according to German BG rule 190) is worn</i> 	Concentration of Cr(VI): 5 - 10 % Work area: Indoors	pp. 50/51

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
Exposure Scenario (ES) on Surface treatment with CrO3 by touch-up with brush (without electrical current) (Uses 4 & 5) (GPS #####)	Task: Surface treatment by brushing/rolling (small to medium sized areas) (PROC 10) (WCS 20)	Ventilation rate: Only good natural ventilation Localised controls: Specific local ventilation must be established in order to control the exposure risks of operators at these work stations; <i>Primary: Fixed capturing hood (90.00 % reduction)</i>	Duration of activity: < 180 min Training and supervision: All persons carrying out these operations must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” Hence, a typical worker exposure monitoring program could include personal monitoring during a normal production cycle. For the purpose of the exposure assessment, it has been assumed that it will be carried out 3 h/day every day.	<ul style="list-style-type: none"> • Protective eye goggles. • Protective gloves. • Acid-resistant clothing. • Respiratory protection: <ul style="list-style-type: none"> • RPE with APF 30 • Yes [APF 30] <i>[Effectiveness Inhal: 96.67%]; When brushing medium sized parts at least half-mask with A2P3 filter (APF 30 according to German BG rule 190) is worn</i> 	Concentration of Cr(VI): 5 - 10 % Work area: Indoors	pp. 50/51

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
Exposure Scenario (ES) on Surface treatment with CrO3 in automatic spray tunnel/cabin (Uses 4 & 5) (GPS C2, D4, D5)	Task: Surface treatment in automatic spray tunnel/cabin (PROC 7) (WCS 18)	Ventilation rate: Only good natural ventilation Localised controls: Primary: Medium level containment (99.00 % reduction) Secondary: Other enclosing hoods (90.00 % reduction)	Duration of activity: < 480 min Training and supervision: All persons with access to the spray tunnel/cabin must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times. Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” Hence, a typical worker exposure monitoring program could include personal monitoring during a normal production cycle. Static measurement at the spray tunnel/cabin during a normal production cycle may support risk assessment.	<ul style="list-style-type: none"> • Protective eye goggles. • Protective gloves. • Acid-resistant clothing / footwear 	Concentration of Cr(VI): 0.1 – 0.5 % Work area: Indoors	pp. 47/48

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
Exposure Scenario (ES) on Drying (Use 4 & 5) (GPS #####)	Task 1: Drying/self-curing (PROC 26) (WCS 22) Task 2: Drying/heat-curing (PROC 26) (WCS 23)	Ventilation rate: Only good natural ventilation Localised controls: Task 2: Primary: Fixed capturing hood (90.00 % reduction)	Duration of activity: Task 1 – Activities of workers within one meter distance to the drying part: < 30 min Task 1 – Activities of workers outside of one meter distance to the drying part: < 90 min Task 2: < 480 min Training and supervision: All persons carrying out these operations must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” Exposure potential is negligible. No measurements seem to be required.		Concentration of Cr(VI): 5 – 10 % Work area: Indoors	pp. 53/54 pp. 55/56

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
Exposure Scenario (ES) on Cleaning (Use 4 & 5) (GPS #####)	<p>Task 1: Cleaning of equipment – Tools cleaning (closed system) (PROC 8b) (WCS 24)</p> <p>Task 2: Cleaning and maintenance of equipment – Tools cleaning (spray cabin) (PROC 8b) (WCS 25)</p> <p>Task 3: Cleaning – Spray cabin and ancillary areas (PROC 8b) (WCS 26)</p>	<p>Ventilation rate: Tasks 1, 3: Only good natural ventilation</p> <p>Task 2: Specialised room ventilation with more than 10 ACH</p> <p>Localised controls: Task 1: Primary: Fixed capturing hood (90.00 % reduction)</p>	<p>Duration of activity: < 15 min</p> <p>Training and supervision: All persons carrying out these operations must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed.</p> <p>Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements.</p> <p>According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of</p> <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” <p>Task 1: Hence, a typical worker exposure monitoring program for cleaning operations could involve static air monitoring.</p> <p>Tasks 2, 3: Hence, personal monitoring could be conducted during cleaning.</p>	<ul style="list-style-type: none"> • Protective gloves • Acid-resistant clothing • Respiratory protection: <ul style="list-style-type: none"> • Full-face-mask with A2P3 filter (minimum APF 400) • <i>Yes [Full-face mask with A2P3 filter]; [Minimum: APF 400; Effectiveness: 99.75%]</i> 	<p>Concentration of Cr(VI): 5 – 10 %</p> <p>Work area: Indoors</p>	<p>pp. 56/57</p> <p>p. 58</p> <p>pp. 59/60</p>

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
Exposure Scenario (ES) on Infrequent maintenance (Use 4-6) (GPS D4, D5)	Task: Infrequent maintenance activities (PROC 8a) (WCS 27)	Ventilation rate: Only good natural ventilation	Duration of activity: 240 min Training and supervision: All maintenance persons with access to the equipment must be instructed in the risks from working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times. Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” Hence, a typical worker exposure monitoring program could include collection of 1 (or 2) personal measurement(s) during the maintenance work.	<ul style="list-style-type: none"> • Protective eye goggles • Face mask in case of splashing risk • Protective gloves • Acid-resistant clothing / footwear • Respiratory protection: <ul style="list-style-type: none"> • RPE with P3 filter • <i>Yes [Respirator with APF 30] [Effectiveness Inhal: 96.67%]; During maintenance activities at least half-mask with A2P3 filter (APF 30 according to German BG rule 190) is worn</i> 	Powder weight fraction [Cr(VI)]: 5 – 10 % Work area: Indoors	p. 61

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
Exposure Scenario (ES) on Sampling (Uses 1, 2, 4-6) (GPS D2)	Task: Sampling (PROC 15) (WCS 28)	Ventilation rate: Only good natural ventilation Localised controls: Primary: Fixed capturing hood (90.00 % reduction)	Duration of activity: < 30 min Training and supervision: All persons with access to operations for sampling must be instructed in the risks from working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” Hence, a typical worker exposure monitoring program for sampling could include collection of 1 personal measurement during the sampling of chromium trioxide during a normal production cycle. Static measurement might also be appropriate.	<ul style="list-style-type: none"> • Protective eye goggles • Protective gloves • Acid-resistant clothing / footwear 	Concentration of Cr(VI) in mixture: 10-50 % Work area: Indoors	pp. 62/63

<p>Exposure Scenario (ES) on Machining (Use 4 & 5) (GPS ####)</p>	<p>Task 1: Machining operations on small to medium sized parts containing Cr(VI) on an extracted bench/extraction booth including cleaning (PROC 21, 24) (WCS 29)</p> <p>Task 2: Machining operations on small to medium sized surfaces containing Cr(VI) on an extracted bench/extraction booth including cleaning (PROC 21, 24) (WCS 30)</p> <p>Task 3: Machining operations in large work areas on parts containing Cr(VI) including cleaning (PROC 21, 24) (WCS 31)</p> <p>Task 4: Machining operations in large work areas on surfaces containing Cr(VI) including cleaning (PROC 21, 24) (WCS 32)</p> <p>Task 5: Machining operations on parts containing Cr(VI) in small work areas including cleaning</p>	<p>Ventilation rate: Only good natural ventilation</p> <p>Localised controls: Tasks 1, 2: Primary: Fixed capturing hood /Vacuum cleaner (HEPA filter with at least 99.00 % reduction)</p> <p>Tasks 3, 4: Primary: Wetting at the point of release/on-tool extraction (90.00 % reduction)/ vacuum cleaning</p>	<p>Duration of activity: Tasks 1, 2: < 180 min</p> <p>Tasks 3, 4, 5, 6: < 60 min</p> <p>Training and supervision: All persons conducting machining operations must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times.</p> <p>Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of</p> <ul style="list-style-type: none"> “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; the operational conditions and risk management measures typical for each of those tasks; the number of workers potentially exposed;” <p>Hence, a typical worker exposure monitoring program could include collection of 1 (or 2) personal measurement(s) during machining work.</p>	<ul style="list-style-type: none"> Protective eye goggles Protective gloves Acid-resistant clothing <ul style="list-style-type: none"> Tasks 1, 3: Respiratory protection: <ul style="list-style-type: none"> RPE with P2 filter <i>Yes [Respirator with APF 10] [Effectiveness Inhal: 90%]; At least half or quarter mask with P2 filter (APF 10 according to German BG rule 190) is worn if workplace monitoring data do not confirm negligible exposure clearly below 1 µg/m³ (e.g. < 0.1 µg/m³)</i> Task 2: Respiratory protection: <ul style="list-style-type: none"> RPE with P3 filter <i>Yes [Respirator with APF 30] [Effectiveness Inhal: 96.67 %]; At least half-mask with P3 filter (APF 30 according to German BG rule 190) is worn if workplace monitoring data do not confirm negligible exposure clearly below 1 µg/m³ (e.g. < 0.1 µg/m³)</i> Task 4: Respiratory protection <ul style="list-style-type: none"> RPE with P3 filter <i>Yes [Respirator with APF 30] [Effectiveness Inhal: 96.67%]; At least half-mask with P3 filter (APF 30 according to German BG rule 190) is worn</i> Task 5: Respiratory protection 	<p>Solid weight fraction: Tasks 1, 3, 5: < 0.1 %</p> <p>Task 2, 4, 6: < 3 %</p> <p>Work area: Indoors</p>	<p>pp. 64/65</p> <p>pp. 66/67</p> <p>pp. 67/68</p> <p>pp. 69/70</p> <p>p. 71</p> <p>pp. 72/73</p>
---	--	---	--	---	---	---

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
	(PROC 21, 24) (WCS 33) Task 6: Machining operations on surfaces containing Cr(VI) in small work areas including cleaning (PROC 21, 24) (WCS 34)			<ul style="list-style-type: none"> • Full-face mask with P3 filter • <i>Yes [Respirator with APF 400] [Effectiveness Inhal: 96.75%]; Full face mask with P3 filter (APF 400 according to German BG rule 190) is worn</i> • Task 6: Respiratory protection <ul style="list-style-type: none"> • Full-face mask with P3 filter and air supply. • <i>Yes [Respirator with APF 1000] [Effectiveness Inhal: 99.9%]; Full face mask with P3 filter and air supply (APF 1000 according to German BG rule 190) is worn</i> 		

<p>Exposure Scenario (ES) on Waste and Wastewater management (Use 1, 2, 4-6) (GPS D7)</p>	<p>Task: Waste and wastewater management (PROC 8b) (WCS 36)</p>	<p>Ventilation rate: Only good natural ventilation</p> <p>Localised controls: 1. Process waste: Primary: Low level containment (90.00 % reduction)</p>	<p>Duration of activity: 1. Process waste: < 30 min 2. Wastewater treatment: < 10 min</p> <p>Training and supervision: 1. Process waste: All persons with access to the waste storage area must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times. 2. Wastewater treatment: All persons with access to the wastewater treatment plant must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times.</p> <p>Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of</p> <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” <p>1. Process waste: Hence, depending on exposure potential, personal air measurement could be available to demonstrate absence of emission. 2. Wastewater treatment: Hence, a typical worker exposure monitoring program could include collection of a static measurement at the wastewater treatment plant. Personal monitoring may not be necessary.</p>	<p>1. Process waste:</p> <ul style="list-style-type: none"> • Respiratory protection: <ul style="list-style-type: none"> • RPE with P3 filter when potential to exposure to airborne Cr(VI) • <i>Yes [Respirator with APF 30] [Effectiveness Inhal: 96.67%]; During waste transfer activities with potential to exposure to airborne Cr(VI) at least half-mask with P3 filter (APF 30 according to German BG rule 190) is worn</i> <p>2. Wastewater treatment:</p> <ul style="list-style-type: none"> • Protective eye goggles • Protective Gloves • Acid-resistant clothing / footwear 	<p>Powder weight fraction [Cr(VI)]: 1. Process waste: 10-50 %</p> <p>Concentration of Cr(VI) in mixture: 2. Wastewater treatment: Minute</p> <p>Work area: Indoors</p>	<p>pp. 74/75</p>
---	--	--	--	--	---	------------------

Succinct Summary of Representative Risk Management Measures (RMMs) and Operational Conditions (OCs)

Legal name of applicant(s): *Chemservice GmbH; Atotech Deutschland GmbH; Boeing Distribution Inc.; Prospere Chemical Logistic OÜ; CROMITAL S.P.A.; Elementis Chromium LLP; MacDermid Enthone GmbH*

Submitted by: *Chemservice GmbH in its legal capacity as Only Representative of Brother CISA (Pty) Ltd.*

Substance: *chromium trioxide, EC Number: 215-607-8, CAS Number: 1333-82-0*

Use title: *Passivation of tin-plated steel (ETP)*

Use number: *Use 6*

June 2021

IMPORTANT: This document was initially prepared with reference to the Chemical Safety Report (CSR) prepared as part of the Application for Authorisation. It has since been revised to reflect amendments to the Exposure Scenarios, required as a condition of the Authorisation. In this document, some but not all WCS of the CSR are indicated for reference purposes. The relevant page in the CSR is also referenced; however, authorities should refer to the amended Exposure Scenarios as attached to the SDS for a complete discussion of the RMMs and OCs.

Table 1: CTAC ES – Environmental Contributing Scenarios

CTAC ES and use	Task (ERC/spERC)	Tonnage	Technical RMMs	Effectiveness of waste water and waste air treatment (for ERC)	Release factors: water, air and soil (for ERC)	Original info in CSR on page(s)
Exposure Scenario (ES) on Use at Industrial Site – Other Surface Treatment (Environmental Contributing Scenario) (Use 6) (GPS E3bis)	Task: Surface treatment of tin plated steel (ERC 6b) (ECS 1)	500 [as Cr(VI)]	<p>All solid and any liquid waste is collected and either the collected waste is directly forwarded to an external waste management company, or Cr(VI) in wastewater is reduced to Cr(III) on-site, and the treated waste is either recycled or forwarded to an external waste management company (licenced contractor) for disposal as hazardous waste</p> <p>Air emissions relating to LEV or extraction systems are filtered (e.g. HEPA filter) or passed through wet scrubbers to remove particulates prior to release to atmosphere. Information from facilities indicates that removal efficiency of at least 99% is typical for industry.</p>	<p>Negligible discharge of Cr(VI) in wastewater from the site</p> <p>Air emission abatement: at least 99% efficiency *</p> <p>* Exhaust air is passed through filters or wet scrubbers according to best available technique (minimum efficiency 99 %).</p>	<p>Water: Negligible</p> <p>Air: 0.001 %^{§†}</p> <p>Soil: 0 (no release to soil)</p>	pp. 25-27

[§] The 90th percentile value of 3.25E-06 mg Cr(VI)/m³ is used as worst-case estimate of Clocal_{air,ann}.

[†] The release factor was estimated using default from ERC6b (0.1%) and applying efficiency of air abatement of 99%.

Table 2: CTAC ES – Worker Contributing Scenarios

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
Exposure Scenario (ES) on Delivery and Storage (Uses 2, 4-6) (GPS D1)	Task: Delivery and storage of raw material (PROC 1) (WCS 1)	General ventilation: Basic (1-3 ACH)	Duration of activity: < 8 hours Occupational Health and Safety Management System: Advanced Training and supervision: All persons with access to the storage areas must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times. Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” Hence, static air measurement could be available for the storage area to demonstrate absence of emission.	<ul style="list-style-type: none"> • Protective eye goggles • Protective gloves • Safety shoes • Acid-resistant clothing 	Concentration of Cr(VI): < 50% Place of use: Indoor	p. 27

Exposure Scenario (ES) on Decanting, Mixing & Re-Filling (Use 4-6) (GPS D3)	<p>Task 1: Decanting of liquids (PROC 8b) (WCS 2)</p> <p>Task 2: Decanting and weighing of solids (PROC 8b) (WCS 3)</p> <p>Task 3: Mixing – Liquids (PROC 5) (WCS 4)</p> <p>Task 4: Mixing – Solids (PROC 5) (WCS 5)</p> <p>Task 5: Re-filling of baths – Liquids (PROC 8b) (WCS 6)</p> <p>Task 6: Re-filling of baths – Solids (PROC 8b) (WCS 7)</p>	<p>Ventilation rate: Only good natural ventilation</p> <p>Localised controls: Task 1: Primary: Medium level containment (99.00 % reduction) The material transfer is enclosed with the receiving vessel being docked or sealed to the source vessel.</p> <p>Task 2: Primary: No localized controls (0.0 % reduction); In most cases, this activity is conducted under LEV. However, this has not been considered in this exposure assessment.</p> <p>Tasks 3, 4: Primary: Low level containment (90.00 % reduction)</p> <p>Tasks 5, 6: Primary: Fixed capturing hood (90.00 % reduction)</p> <p>Containment: Task 2, 4: Handling that reduces contact between product and adjacent air.</p>	<p>Duration of activity: Tasks 1, 2, 3, 4: < 60 min Tasks 5, 6: < 10 min</p> <p>Training and supervision: All persons with access to chromium trioxide must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times.</p> <p>Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of</p> <ul style="list-style-type: none"> “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; the operational conditions and risk management measures typical for each of those tasks; the number of workers potentially exposed;” <p>Tasks 1-4: Hence, a typical worker exposure monitoring program could include collection of 1 (or 2) personal measurement(s)during the re-adjustment work. Static measurement might also be appropriate.</p> <p>Tasks 5, 6: Hence, a typical worker exposure monitoring program could include collection of 1 (or 2) personal measurement(s)during the re-adjustment work. Static measurement might also be appropriate.</p>	<p>Tasks 1-6:</p> <ul style="list-style-type: none"> Protective eye goggles. Protective gloves. Acid-resistant clothing / footwear. <p>Task 2, 4, 6:</p> <ul style="list-style-type: none"> Respiratory protection: <ul style="list-style-type: none"> RPE with P3 filter <i>Yes [Respirator with APF 30] [Effectiveness Inhal: 96.67%]; When handling solid chromium trioxide, at least half-mask with P3 filter (APF 30 according to German BG rule 190) is worn</i> <p>Task 5:</p> <ul style="list-style-type: none"> Respiratory protection: <ul style="list-style-type: none"> In the rare case of refilling of a closed, extracted spray bath for spray etching of copper – an essential step in the manufacturing process of screens with specific three-dimensional indentations – , full-face-mask with A2P3 filter (minimum APF 400) is required. <p>Task 6:</p> <ul style="list-style-type: none"> Face mask in case of splashing risk 	<p>Concentration of Cr(VI): Tasks 1, 3, 5: 10 – 50%</p> <p>Powder weight fraction [Cr(VI)]: Tasks 2, 4, 6: 10 – 50%</p> <p>Work area: Indoor</p>	<p>p. 28</p> <p>pp. 27/28</p> <p>p. 31</p> <p>pp. 32/33</p> <p>pp. 33/34</p> <p>pp. 35/36</p>
Exposure Scenario (ES) on Surface Treatment (Use	<p>Task 1: Surface treatment of tin plated steel with Cr(VI) – Loading and unloading of</p>	<p>General ventilation: Basic (1-3 ACH)</p>	<p>Duration of activity: Tasks 1, 2: < 8 hours Task 3: < 60 min</p>	<p>Task 1:</p> <ul style="list-style-type: none"> No specific PPE apart from safety shoes and gloves are usually required during loading and unloading. 	<p>Concentration of Cr(VI): 10 – 50%</p> <p>Place of use:</p>	<p>pp. 37 – 41</p>

<p>6) (GPS C6, D4, D5)</p>	<p>jigs (PROC 4) (for all tasks: WCS 8-15)</p> <p>Task 2: Surface treatment of tin plated steel with Cr(VI) – Passivation of tin plated steel (ETP) and electrolytic chromium coated steel (ECCS) processes (PROC 13) (for all tasks: WCS 8-15)</p> <p>Task 3: Maintenance of equipment (PROC 8a) (for all tasks: WCS 8-15)</p>	<p>Local exhaust ventilation: Task 2: LEV is provided to efficiently remove chromium trioxide mist from the process.; <i>Yes, if Cr(VI) or other dangerous substances are used in the pre-treatment</i></p>	<p>Occupational Health and Safety Management System: Advanced</p> <p>Training and supervision: Task 1: Apart from the general training requirements and supervision conditions implemented by each individual employer, no additional training and supervision terms have been defined in the authorization conditions by the EC.</p> <p>Task 2: All persons with access to the plating line must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times.</p> <p>Task 3: All persons with access to the plating line must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment.</p> <p>Monitoring: Task 1: Direct exposure to CrVI is not possible from the un-plated or cleaned and chrome-plated products. Secondary exposure is possible from the chrome baths in the vicinity (far-field exposure). Tasks 1-3: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of</p> <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” <p>Task 1: Hence, a typical worker exposure monitoring program for loading/unloading operations could involve personal monitoring but static air monitoring may also be appropriate.</p> <p>Task 2: Hence, a typical worker exposure monitoring program could include collection of 2 static measurements at each position of the plating line with potential for release of chromium trioxide</p>	<p>Task 2:</p> <ul style="list-style-type: none"> • Protective eye goggles. • Acid-resistant clothing / footwear. <p>Task 3:</p> <ul style="list-style-type: none"> • Protective eye goggles. • Protective gloves. • Acid-resistant clothing / footwear. • Face mask/visor in case of splashing risk. • Respiratory protection: <ul style="list-style-type: none"> • P3 filter (mandatory for encapsulated open tank process lines, recommended for other process lines). 	<p>Indoor</p>	
----------------------------	---	--	---	--	---------------	--

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
			<p>during a normal production cycle. Personal monitoring may not be necessary when potential for exposure is shown to be negligible.</p> <p>Task 3: Hence, a typical worker exposure monitoring program could include collection of 1 (or 2) personal measurement(s) during the maintenance work.</p>			
Dan Exposure Scenario (ES) on Infrequent maintenance (Use 4-6) (GPS D4, D5)	Task: Infrequent maintenance activities (PROC 8a) (WCS 16)	Ventilation rate: Only good natural ventilation	<p>Duration of activity: 240 min</p> <p>Training and supervision: All maintenance persons with access to the equipment must be instructed in the risks from working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times.</p> <p>Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of</p> <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” <p>Hence, a typical worker exposure monitoring program could include collection of 1 (or 2) personal measurement(s) during the maintenance work.</p>	<ul style="list-style-type: none"> • Protective eye goggles • Face mask in case of splashing risk • Protective gloves • Acid-resistant clothing / footwear • Respiratory protection: <ul style="list-style-type: none"> • RPE with P3 filter • <i>Yes [Respirator with APF 30] [Effectiveness Inhal: 96.67%]; During maintenance activities at least half-mask with A2P3 filter (APF 30 according to German BG rule 190) is worn</i> 	<p>Powder weight fraction [Cr(VI)]: 5 – 10 %</p> <p>Work area: Indoors</p>	p. 43

CTAC ES and Use	Task of the ES and PROC (WCS as basis)	Technical RMMs * Containment, * Ventilation (general, LEV...) * Customised technical installation, etc.	Organisational RMMs * Duration of exposure * OSH management system * Supervision * Monitoring arrangements * Training, etc.	PPE (characteristics)	Other conditions	Original info in CSR on page(s)
Exposure Scenario (ES) on Sampling (Uses 1, 2, 4-6) (GPS D2)	Task: Sampling (PROC 15) (WCS 17)	Ventilation rate: Only good natural ventilation Localised controls: Primary: Fixed capturing hood (90.00 % reduction)	Duration of activity: < 30 min Training and supervision: All persons with access to operations for sampling must be instructed in the risks from working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” Hence, a typical worker exposure monitoring program for sampling could include collection of 1 personal measurement during the sampling of chromium trioxide during a normal production cycle. Static measurement might also be appropriate.	<ul style="list-style-type: none"> • Protective eye goggles • Protective gloves • Acid-resistant clothing / footwear 	Concentration of Cr(VI) in mixture: 10-50 % Work area: Indoors	pp. 45/45

<p>Exposure Scenario (ES) on Waste and Wastewater management (Use 1, 2, 4-6) (GPS D7)</p>	<p>Task: Waste and wastewater management (PROC 8b) (WCS 19)</p>	<p>Ventilation rate: Only good natural ventilation</p> <p>Localised controls: 1. Process waste: Primary: Low level containment (90.00 % reduction)</p>	<p>Duration of activity: 1. Process waste: < 30 min 2. Wastewater treatment: < 10 min</p> <p>Training and supervision: 1. Process waste: All persons with access to the waste storage area must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times. 2. Wastewater treatment: All persons with access to the wastewater treatment plant must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times.</p> <p>Monitoring: Adequate monitoring data must be available at each facility carrying out this operation to evidence absence of worker exposure. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements. According to the Commission decision, air monitoring programmes on occupational exposure to CrVI have to be conducted at least annually. The first measurement shall be performed at latest six months from the date of adoption of the decision [until June 18th, 2021] and shall be based on relevant standard methodologies or protocols. The measurements shall be representative of</p> <ul style="list-style-type: none"> • “the range of tasks undertaken where exposure to chromium is possible, including tasks involving process and maintenance workers; • the operational conditions and risk management measures typical for each of those tasks; • the number of workers potentially exposed;” <p>1. Process waste: Hence, depending on exposure potential, personal air measurement could be available to demonstrate absence of emission. 2. Wastewater treatment: Hence, a typical worker exposure monitoring program could include collection of a static measurement at the wastewater treatment plant. Personal monitoring may not be necessary.</p>	<p>1. Process waste:</p> <ul style="list-style-type: none"> • Respiratory protection: <ul style="list-style-type: none"> • RPE with P3 filter when potential to exposure to airborne Cr(VI) • <i>Yes [Respirator with APF 30] [Effectiveness Inhal: 96.67%]; During waste transfer activities with potential to exposure to airborne Cr(VI) at least half-mask with P3 filter (APF 30 according to German BG rule 190) is worn</i> <p>2. Wastewater treatment:</p> <ul style="list-style-type: none"> • Protective eye goggles • Protective Gloves • Acid-resistant clothing / footwear 	<p>Powder weight fraction [Cr(VI)]: 1. Process waste: 10-50 % Concentration of Cr(VI) in mixture: 2. Wastewater treatment: Minute Work area: Indoors</p>	<p>pp. 47/48</p>
---	--	--	--	--	---	------------------

