Exposure Scenario (ES): Use as an extraction solvent in caprolactam production

ECS and WCS	Task (ERC/ spERC or PROC)	Annual amount per site (tonnes/year)	Technical RMMs, including: *Containment, *Ventilation (general, LEV…) *customized technical installation, etc.	Organisational RMMs, including: *Duration and Frequency of exposure *OSH management system *Supervision *Monitoring arrangements *Training, etc.	PPE (characteristics)	Other conditions	Effectiveness of waste water and waste air treatment (for ERC)	Release factors: water, air and soil (for ERC)*	Detailed info. in CSR (section)
EnvCS 1	**ERC 4**	100	On-site wastewater treatment plant	**Monitoring arrangements:** Monitoring of emissions to air and wastewater Additional monitoring in wastewater streams and prior to discharge Air monitoring close to caprolactam unit and in surrounding villages	Not applicable		Not applicable	Water: 1.095 % Air: 0.5 % Soil: 0	9.0.3 & 9.1.1
WCS 2	**PROC 2**		Closed continuous process with occasional controlled exposure Closed sampling	**Duration of activity**: > 4 hours **Monitoring arrangements:** Biological monitoring Air monitoring (personal sampling) **Training:** Continuous training of operators, including training in the use of PPE OHS management system applied	**Dermal Protection:** Yes (dermal efficiency 95 %)* **Respiratory Protection:** Yes (inhal efficiency: 90%)*** (defined for specific tasks, such as the return of samples from the quality control lab)	**Place of use:** Indoors **TCE concentration:** <= 100 %	Not applicable	Not applicable	9.0.4 & 9.1.2
WCS 3	**PROC 8b**		Transfer of substance at dedicated unloading station Closed sampling	**Duration of activity:** ≤ 300 min **Frequency of activity:** 2x/a **Monitoring arrangements:** Biological monitoring Air monitoring (personal sampling) **Training:** Continuous training of operators, including training in the use of PPE OHS management system applied	**Dermal Protection:** Yes (dermal efficiency 95 %)* **Respiratory Protection:** Yes (inhal efficiency: 90%)***	**Place of use**: Outdoors **TCE concentration:** <= 100 %	Not applicable	Not applicable	9.0.4 & 9.1.3
WCS4	**PROC 28**		Flushing with water under pressure prior to any equipment dismantling and line opening Depending on the type of equipment –	**Duration of activity**: > 4 hours Permit procedure PID monitoring after cleaning to define whether respiratory protection is required **Monitoring arrangements:** Biological monitoring	**Dermal Protection:** Yes (dermal efficiency 95 %)* **Respiratory Protection:** Yes (inhal efficiency: 90%)*** (depending on results of PID monitoring)	**Place of use**: Indoors/outdoors **TCE concentration:** <= 100 %	Not applicable	Not applicable	9.0.4 & 9.1.4

ECS and WCS	Task (ERC/ spERC or PROC)	Annual amount per site (tonnes/year)	Technical RMMs, including: *Containment, *Ventilation (general, LEV…) *customized technical installation, etc.	Organisational RMMs, including: *Duration and Frequency of exposure *OSH management system *Supervision *Monitoring arrangements *Training, etc.	PPE (characteristics)	Other conditions	Effectiveness of waste water and waste air treatment (for ERC)	Release factors: water, air and soil (for ERC)*	Detailed info. in CSR (section)
			additional cleaning with steam prior to any maintenance works	Air monitoring (personal sampling) **Training:** Continuous training of maintenance workers, including training in the use of PPE OHS management system applied					
WCS5	**PROC 15**		**Ventilation:** Local exhaust ventilation: Yes (Indoor with LEV) (Inhal efficiency: 90%)	**Duration of activity:** > 4 hours Biological monitoring Air monitoring (personal sampling) **Training:** Continuous training of lab staff, including training in the use of PPE OHS management system applied	**Dermal Protection:** Yes (dermal efficiency 95%)** **Respiratory Protection:** No	**Place of use**: Indoors **TCE concentration:** <= 100 %	Not applicable	Not applicable	9.0.4 & 9.1.5
WCS 6	**No PROC** (indirect exposure)		Not applicable: see sections 9.0.4 & 9.1.6 for details						9.0.4 & 9.1.6
WCS 7	**PROC 8b**		Transfer of substance at dedicated station	**Duration of activity:** ≤ 90min **Frequency of activity:** 2x/a (maximum) **Monitoring arrangements:** Biological monitoring Air monitoring (personal sampling) **Training:** Continuous training of operators, including training in the use of PPE OHS management system applied	**Dermal Protection:** Yes (dermal efficiency 95 %)* **Respiratory Protection:** No	**Place of use**: Outdoors **TCE concentration:** <= 5 %	Not applicable	Not applicable	9.0.4 & 9.1.7

* Gloves (operators, unloading operators, maintenance workers and external waste operators): ChemTek™ 38-628 from Ansell (viton/butyl, thickness: 7 mm, breakthrough time > 480 min (see Annex 7), conforms to the requirements of EN 374:2003).
** Gloves (lab staff): Nitrile gloves from Ansell (Solvex 37-675.676, breakthrough time 10-30 min (see Annex 7), adequate for splash contamination during laboratory activities, conform to the requirements of EN 374:2003).
*** BLS 5700 full face mask (BLS srl, Cormano, Italy) with ABEK2P3R combination filter.
Abbreviations: WCS=Worker contributing scenario, ECS==EnvCS=Environmental Contributing Scenario,* ERC=Environmental Release Category, PID: photo-ionisation detector; PROC= Process category, LEV=Local Exhaust Ventilation, PPE=Personal Protective Equipment