	Bedriftens navn:	**BAT-konklusjoner for avfallsbehandling** **Indre Østfold Renovasjon IKS**
Kapitler for BAT-konklusjoner	**BAT-konklusjon nr.**	**BAT-konklusjoner med beskrivelse av teknikk**
1. GENERAL BAT CONCLUSIONS		
1.1. **Overall environmental performance**	BAT 1.	In order to improve the overall environmental performance, BAT is to implement and adhere to an environmental management system (EMS) that incorporates all of the following features: **I.** commitment of the management, including senior management; **II.** definition, by the management, of an environmental policy that includes the continuous improvement of the environmental performance of the installation; **III.** planning and establishing the necessary procedures, objectives and targets, in conjunction with financial planning and investment;

		IV. implementation of procedures paying particular attention to: (a) structure and responsibility, (b) recruitment, training, awareness and competence, (c) communication, (d) employee involvement, (e) documentation, (f) effective process control, (g) maintenance programmes, (h) emergency preparedness and response, (i) safeguarding compliance with environmental legislation;
		V. checking performance and taking corrective action, paying particular attention to: (a) monitoring and measurement (see also the JRC Reference Report on Monitoring of emissions to air and water from IED-installations – ROM), (b) corrective and preventive action, (c) maintenance of records, (d) independent (where practicable) internal or external auditing in order to determine whether or not the EMS conforms to planned arrangements and has been properly implemented and maintained;
		VI. review, by senior management, of the EMS and its continuing suitability, adequacy and effectiveness;

		VII. following the development of cleaner technologies; **VIII.** consideration for the environmental impacts from the eventual decommissioning of the plant at the stage of designing a new plant, and throughout its operating life; **IX.** application of sectoral benchmarking on a regular basis. **X.** waste stream management (see BAT 2); **XI.** an inventory of waste water and waste gas streams (see BAT 3) **XII.** residues management plan (see description in Section 6.6.5); **XIII.** accident management plan (see description in Section 6.6.5). **XIV.** odour management plan (see BAT 12); **XV.** noise and vibration management plan (see BAT 17); *Applicability* The scope (e.g. level of detail) and nature of the EMS (e.g. standardised or non-standardised) will generally be related to the nature, scale and complexity of the installation, and the range of environmental impacts it may have (determined also by the type and amount of wastes processed).
	BAT 2.	In order to improve the overall environmental performance of the plant, BAT is to use all of the techniques given below. **a.** Set up and implement waste characterisation and pre-acceptance procedures **b.** Set up and implement waste acceptance procedures

		c. Set up and implement a waste tracking system and inventory **d.** Set up and implement an output quality management system **e.** Ensure waste segregation **f.** Ensure waste compatibility prior to mixing or blending of waste **g.** Sort incoming solid waste
	BAT 3.	In order to facilitate the reduction of emissions to water and air, BAT is to establish and to maintain an inventory of waste water and waste gas streams, as part of the environmental management system (see BAT 1), that incorporates all of the following features: **(i)** information about the characteristics of the waste to be treated and the waste treatment processes, including: (a) simplified process flow sheets that show the origin of the emissions; (b) descriptions of process-integrated techniques and waste water/waste gas treatment at source including their performances; **(ii)** information about the characteristics of the waste water streams, such as: (a) average values and variability of flow, pH, temperature, and conductivity; (b) average concentration and load values of relevant substances and their variability (e.g. COD/TOC, nitrogen species, phosphorus, metals, priority substances / micropollutants); (c) data on bioeliminability (e.g. BOD, BOD to COD ratio, Zahn-Wellens test, biological inhibition potential (e.g. nitrification)) (see BAT 52);

	(iii) information about the characteristics of the waste gas streams, such as: (a) average values and variability of flow and temperature; (b) average concentration and load values of relevant substances and their variability (e.g. organic compounds, POPs such as PCBs); (c) flammability, lower and higher explosive limits, reactivity; (d) presence of other substances that may affect the waste gas treatment system or plant safety (e.g. oxygen, nitrogen, water vapour, dust).
BAT 4.	In order to reduce the environmental risk associated with the storage of waste, BAT is to use all of the techniques given below. **a.** Optimised storage location **b.** Adequate storage capacity **c.** Safe storage operation **d.** Separate area for storage and handling of packaged hazardous waste
BAT 5.	In order to reduce the environmental risk associated with the handling and transfer of waste, BAT is to set up and implement handling and transfer procedures. *Description* Handling and transfer procedures aim to ensure that wastes are safely handled and transferred to the respective storage or treatment. They include the following elements: - handling and transfer of waste are carried out by competent staff; - handling and transfer of waste are duly documented, validated prior to execution and verified after execution; - measures are taken to prevent, detect and mitigate spills; - operation and design precautions are taken when mixing or blending wastes (e.g. vacuuming dusty/powdery wastes). Handling and transfer procedures are risk-based considering the likelihood of accidents and incidents and their environmental impact.

1.2. **Monitoring**	BAT 6.	For relevant emissions to water as identified by the inventory of waste water streams (see BAT 3), BAT is to monitor key process parameters (e.g. waste water flow, pH, temperature, conductivity, BOD) at key locations (e.g. at the inlet and/or outlet of the pretreatment, at the inlet to the final treatment, at the point where the emission leaves the installation).
	BAT 7.	BAT is to monitor emissions to water with at least the frequency given below, and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.
	BAT 8.	BAT is to monitor channelled emissions to air with at least the frequency given below, and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.
	BAT 9.	BAT is to monitor diffuse emissions of organic compounds to air from the regeneration of spent solvents, the decontamination of equipment containing POPs with solvents, and the physico-chemical treatment of solvents for the recovery of their calorific value, at least once per year using one or a combination of the techniques given below. **a.** Measurement **b.** Emissions factors **c.** Mass balance

BAT 10.	BAT is to periodically monitor odour emissions. *Description* Odour emissions can be monitored using: - EN standards (e.g. dynamic olfactometry according to EN 13725 in order to determine the odour concentration or EN 16841-1 or -2 in order to determine the odour exposure); - when applying alternative methods for which no EN standards are available (e.g. estimation of odour impact), ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality. The monitoring frequency is determined in the odour management plan (see BAT 12). *Applicability* The applicability is restricted to cases where an odour nuisance at sensitive receptors is expected and/or has been substantiated.
BAT 11.	BAT is to monitor the annual consumption of water, energy and raw materials as well as the annual generation of residues and waste water, with a frequency of at least once per year. *Description* Monitoring includes direct measurements, calculation or recording, e.g. using suitable meters or invoices. The monitoring is broken down at the most appropriate level (e.g. at process or plant/installation level) and considers any significant changes in the plant/installation

1.3. **Emissions to air**	BAT 12.	In order to prevent or, where that is not practicable, to reduce odour emissions, BAT is to set up, implement and regularly review an odour management plan, as part of the environmental management system (see BAT 1), that includes all of the following elements: - a protocol containing actions and timelines; - a protocol for conducting odour monitoring as set out in BAT 10; - a protocol for response to identified odour incidents, e.g. complaints; - an odour prevention and reduction programme designed to identify the source(s); to characterise the contributions of the sources; and to implement prevention and/or reduction measures. *Applicability* The applicability is restricted to cases where an odour niusance at senstitive
	BAT 13.	In order to prevent or, where that is not practicable, to reduce odour emissions, BAT is to use one or a combination of the techniques given below. **a.** Minimising residence times **b.** Using chemical treatment **c.** Optimising aerobic treatment
	BAT 14.	In order to prevent or, where that is not practicable, to reduce diffuse emissions to air, in particular of dust, organic compounds and odour, BAT is to use an appropriate combination of the techniques given below. Depending on the risk posed by the waste in terms of diffuse emissions to air, BAT 14d is especially relevant. **a.** Minimising the number of potential diffuse emissions sources **b.** Selection and use of high-integrity equipment **c.** Corrosion prevention **d.** Containment, collection and treatment of diffuse emissions:

		e. Dampening **f.** Maintenance **g.** Cleaning of waste treatment and storage areas **h.** Leak detection and repair (LDAR) programme
	BAT 15.	BAT is to use flaring only for safety reasons or for non-routine operating conditions (e.g. start-ups, shutdowns) by using both of the techniques given below. **a.** Correct plant design **b.** Plant management
	BAT 16.	In order to reduce emissions to air from flares when flaring is unavoidable, BAT is to use both of the techniques given below. **a.** Correct design of flaring devices **b.** Monitoring and recording as part of flare management
1.4. **Noise and vibrations**	BAT 17.	In order to prevent or, where that is not practicable, to reduce noise and vibration emissions, BAT is to set up, implement and regularly review a noise and vibration management plan, as part of the environmental management system (see BAT 1), that includes all of the following elements: **I.** a protocol containing appropriate actions and timelines; **II.** a protocol for conducting noise and vibration monitoring; **III.** a protocol for response to identified noise and vibration events, e.g. complaints; **IV.** a noise and vibration reduction programme designed to identify the source(s), to measure/estimate noise and vibration exposure, to characterise the contributions of the sources and to implement prevention and/or reduction measures. *Applicability* The applicability is restricted to cases where a noise or vibration nuisance at senstitive receptors is expected and/or has been substantiated.

	BAT 18.	In order to prevent or, where that is not practicable, to reduce noise and vibration emissions, BAT is to use one or a combination of the techniques given below. **a.** Appropriate location of equipment and buildings **b.** Operational measures **c.** Low-noise equipment **d.** Noise and vibration control equipment **e.** Noise attenuation
1.5. **Emissions to water**	BAT 19.	In order to optimise water consumption, to reduce the volume of waste water generated and to prevent or, where that is not practicable, to reduce emissions to soil and water, BAT is to use an appropriate combination of the techniques given below. (BAT-konklusjoner for utfyllende liste for BAT 19) **a.** Water management **b.** Water recirculation **c.** Impermeable surface **d.** Techniques to reduce the likelihood and impact of overflows and failures from tanks and vessels **e.** Roofing of waste storage and treatment areas **f.** Segregation of water streams **g.** Adequate drainage infrastructure **h.** Design and maintenance provisions to allow detection and repair of leaks **i.** Appropriate buffer storage capacity
	BAT 20.	In order to reduce emissions to water, BAT is to treat waste water using an appropriate combination of the techniques given below.

		Preliminary and primary treatment, e.g. a. Equalisation b. Neutralisation c. Physical separation, e.g. screens, sieves, grit separators, grease separators, oil-water separation or primary settlement tanks ***Physico-chemical treatment, e.g.*** d. Adsorption e. Distillation/rectification f. Chemical precipitation g. Chemical oxidation h. Chemical reduction i. Evaporation j. Ion exchange process k. Stripping ***Biological treatment, e.g.*** l. Activated sludge process m. Membrane bioreactor ***Nitrogen removal*** n. Nitrification/denitrification when the treatment includes a biological treatment ***Solids removal, e.g.*** o. Coagulation and flocculation p. Sedimentation q. Filtration (e.g. sand filtration, microfiltration, ultrafiltration) r. Flotation See Table 6.1 for BAT-associated amissions levels (BAT-AELs) for direct discharges to a receiving water body. See Table 6.2 for BAT-associated emission levels (BAT-AELs) for indirect discharges to a receiving body. Se fanen under for tabeller.
1.6. **Emissions from accidents and incidents**	BAT 21.	In order to prevent or limit the environmental consequences of accidents and incidents, BAT is to use all of the techniques given below, as part of the accident management plan (see BAT 1). **a.** Protection measures **b.** Management of incidental/accidental emissions

		c. Incident/accident registration and assessment system
1.7. **Material efficiency**	BAT 22.	In order to use materials efficiently, BAT is to substitute materials with waste. *Description* Waste is used instead of other materials for the treatment of wastes (e.g. waste alkalis or waste acids are used for pH adjustment, fly ashes are used as binders). *Applicability* Some applicability limitations derive from the risks of contamination posed by the presence of impurities (e.g. heavy metals, POPs, salts, pathogens) in the waste that substitutes other materials. Another limitation is the compatibility of the waste substituting other materials with the waste input (see BAT 2).
1.8. **Energy efficiency**	BAT 23.	In order to use energy efficiently, BAT is to use both of the techniques given below. **a.** Energy efficiency plan **b.** Energy balance record
1.9. **Reuse of packaging**	BAT 24.	In order to reduce the quantity of waste sent for disposal, BAT is to maximise the reuse of packaging, as part of the residues management plan (see BAT 1). *Description* Packaging (drums, containers, IBCs, palettes, etc.) is reused for containing waste, when it is in good condition and sufficiently clean, depending on a compatibility check between the substances contained (in consecutive uses). If necessary, packaging is sent for appropriate treatment prior to reuse (e.g. reconditioning, cleaning). *Applicability* Some applicability restrictions derive from the risks of contamination of the waste posed by the reused packaging.

2. BAT CONCLUSIONS FOR THE MECHANICAL TREATMENT OF WASTE		Unless otherwise stated, the BAT conclusions presented in Section 2 apply to the mechanical treatment of waste when it is not combined with biological treatment, and in addition to the general BAT conclusions in Section 1.
2.1. **General BAT conclusions for the mechanical treatment of waste**		
2.1.1. Emissions to air	BAT 25.	In order to reduce emissions to air of dust, and of particulate-bound metals, PCDD/F and dioxin-like PCBs, BAT is to apply BAT 14d and to use one or a combination of the techniques given below. **a.** Cyclone **b.** Fabric filter **c.** Wet scrubbing **d.** Water injection into the shredder See Table 6.3 for BAT-associated emission level (BAT AEL) for channelles dust emissions to air from the mechanical treatment of waste.
2.2. **BAT conclusions for the mechanical treatment in shredders of metal waste**		Unless otherwise stated, the BAT conclusions presented in this section apply to the mechanical treatment in shredders of metal waste, in addition to BAT 25.
2.2.1. Overall environmental performance	BAT 26.	In order to improve the overall environmental performance, and to prevent emissions due to accidents and incidents, BAT is to use BAT 14g and all of the techniques given below: **a.** implementation of a detailed inspection procedure for baled waste before shredding; **b.** removal of dangerous items from the waste input stream and their safe disposal (e.g. gascylinders, non-depolluted EoLVs, non-depolluted WEEE, items contaminated with PCBsor mercury, radioactive items); **c.** treatment of containers only when accompanied by a declaration of cleanliness.
2.2.2. Deflagrations	BAT 27.	In order to prevent deflagrations and to reduce emissions when deflagrations occur, BAT is to use technique a. and one or both of the techniques b. and c. given below. **a.** Deflagration management plan **b.** Pressure relief dampers **c.** Pre-shredding

2.2.3. Energy efficiency	BAT 28.	In order to use energy efficiently, BAT is to keep the shredder feed stable. *Description* The shredder feed is equalised by avoiding disruption or overload of the waste feed which would lead to unwanted shutdowns and start-ups of the shredder.
2.3. **BAT conclusions for the treatment of WEEE containing VFCs and/or VHCs**		Unless otherwise stated, the BAT conclusions presented in this section apply to the treatment of WEEE containing VFCs and/or VHCs, in addition to BAT 25.
2.3.1. Emissions to air	BAT 29.	In order to prevent or, where that is not practicable, to reduce emissions of organic compounds to air, BAT is to apply BAT 14d, BAT 14h and to use technique a. and one or both of the techniques b. and c. given below. **a.** Optimised removal and capture of refrigerants and oils **b.** Cryogenic condensation: **c.** Adsorption See Table 6.4 for BAT-associated emission levels (BAT-AELs) for channelled TVOC and CFC emissions to air from the treatment of WEEE containing VFCs and/or VHCs.
2.3.2. Explosions	BAT 30.	In order to prevent emissions due to explosions when treating WEEE containing VFCs and/or VHCs, BAT is to use either of the techniques given below. **a.** Inert atmosphere **b.** Forced ventilation
2.4. **BAT conclusions for the mechanical treatment of waste with calorific value**		
2.4.1. Emissions to air	BAT 31.	In order to reduce emissions to air of organic compounds, BAT is to apply BAT 14d and to use one or a combination of the techniques given below. **a.** Adsorption **b.** Biofilter **c.** Thermal oxidation **d.** Wet scrubbing See Table 6.5 for BAT-associated emission level (BAT-AEL) for channelled TVOC emissions to air from the mechanical treatment of waste with calorific value.

2.5. **BAT conclusions for the mechanical treatment of WEEE containing mercury**		Unless otherwise stated, the BAT conclusions presented in this section apply to the mechanical treatment of WEEE containing mercury, in addition to BAT 25.
2.5.1. Emissions to air	BAT 32.	In order to reduce mercury emissions to air, BAT is to collect mercury emissions at source, to send them to abatement and to carry out adequate monitoring. *Description* This includes all of the following measures: - equipment used to treat WEEE containing mercury is enclosed, under negative pressureand connected to a local exhaust ventilation (LEV) system ; - waste gas from the processes is treated by dedusting techniques such as cyclones, fabricfilters, and HEPA filters, followed by adsorption on activated carbon (see Section 6.6.1); - the efficiency of the waste gas treatment is monitored; - mercury levels in the treatment and storage areas are measured frequently (e.g. once everyweek) to detect potential mercury leaks. See Table 6.6 for BAT-associated emission level (BAT-AEL) for channelled mercury emission to air from the mechanical treatment of WEEE containing mercury.
3. BAT CONCLUSIONS FOR THE BIOLOGICAL TREATMENT OF WASTE		Unless otherwise stated, the BAT conclusions presented in Section 3 apply to the biological treatment of waste, and in addition to the general BAT conclusions in Section 1. The BAT conclusions in Section 3 do not apply to the treatment of water-based liquid waste.
3.1. **General BAT conclusions for the biological treatment of waste**		

3.1.1. Overall environmental performance	BAT 33.	In order to reduce odour emissions and to improve the overall environmental performance, BAT is to select the waste input. *Description* The technique consists of carrying out the pre-acceptance, acceptance, and sorting of the waste input (see BAT 2) so as to ensure the suitability of the waste input for the waste treatment, e.g. in terms of nutrient balance, moisture or toxic compounds which may reduce the biological activity.
3.1.2 Emissions to air	BAT 34.	In order to reduce channelled emissions to air of dust, organic compounds and odorous compounds, including H2S and NH3, BAT is to use one or a combination of the techniques given below. **a.** Adsorption **b.** Biofilter **c.** Fabric filter **d.** Thermal oxidation **e.** Wet scrubbing See Table 6.7 for BAT-associated emission levels (BAT-AELs) for channelled NH3, odour, dust and TVOC emissions to air from the biological treatment of waste.
3.1.3. Emissions to water and water usage	BAT 35.	In order to reduce the generation of waste water and to reduce water usage, BAT is to use all of the techniques given below.
		a. Segregation of water streams
		b. Water recirculation
		c. Minimisation of the generation of leachate
3.2. **BAT conclusions for the aerobic treatment of waste**		Unless otherwise stated, the BAT conclusions presented in this section apply to the aerobic treatment of waste, and in addition to the general BAT conclusions for the biological treatment of waste in Section 3.1.

3.2.1. Overall environmental performance	BAT 36.	In order to reduce emissions to air and to improve the overall environmental performance, BAT is to monitor and/or control the key waste and process parameters. *Description* Monitoring and/or control of key waste and process parameters, including: - waste input characteristics (e.g. C to N ratio, particle size); - temperature and moisture content at different points in the windrow; - aeration of the windrow (e.g. via the windrow turning frequency, O2 and/or CO2 concentration in the windrow, temperature of air streams in the case of forced aeration); - windrow porosity, height and width. *Applicability* Monitoring of the moisture content in the windrow is not applicable to enclosed processes when health and/or safety issues have been identified. In that case, the moisture content can be monitored before loading the waste into the enclosed
3.2.2. Odour and diffuse emissions to air	BAT 37.	In order to reduce diffuse emissions to air of dust, odour and bioaerosols from open-air treatment steps, BAT is to use one or both of the techniques given below. **a.**Use of semipermeable membrane covers **b.** Adaptation of operations to the meteorological conditions
3.3. **BAT conclusions for the anaerobic treatment of waste**		Unless otherwise stated, the BAT conclusions presented in this section apply to the anaerobic treatment of waste, and in addition to the general BAT conclusions for the biological treatment of waste in Section 3.1.

3.3.1. Emissions to air	BAT 38.	In order to reduce emissions to air and to improve the overall environmental performance, BAT is to monitor and/or control the key waste and process parameters. *Description* Implementation of a manual and/or automatic monitoring system to: - ensure a stable digester operation; - minimise operational difficulties, such as foaming, which may lead to odour emissions; - provide sufficient early warning of system failures which may lead to a loss of containment and explosions. This includes monitoring and/or control of key waste and process parameters, e.g.: - pH and alkalinity of the digester feed; - digester operating temperature; - hydraulic and organic loading rates of the digester feed; - concentration of volatile fatty acids (VFA) and ammonia within the digester and digestate; - biogas quantity, composition (e.g. H2S) and pressure; - liquid and foam levels in the digester.
3.4. **BAT conclusions for the mechanical biological treatment (MBT) of waste**		Unless otherwise stated, the BAT conclusions presented in this section apply to MBT, and in addition to the general BAT conclusions for the biological treatment of waste in Section 3.1. The BAT conclusions for the aerobic treatment (Section 3.2) and anaerobic treatment (Section 3.3) of waste apply, when relevant, to the mechanical biological treatment of waste.
3.4.1. Emissions to air	BAT 39.	In order to reduce emissions to air, BAT is to use both of the techniques given below. **a.** Segregation of the waste gas streams **b.** Recirculation of waste gas
4. BAT CONCLUSIONS FOR THE PHYSICO-CHEMICAL TREATMENT OF WASTE		Unless otherwise stated, the BAT conclusions presented in Section 4 apply to the physico-chemical treatment of waste, and in addition to the general BAT conclusions in Section 1.

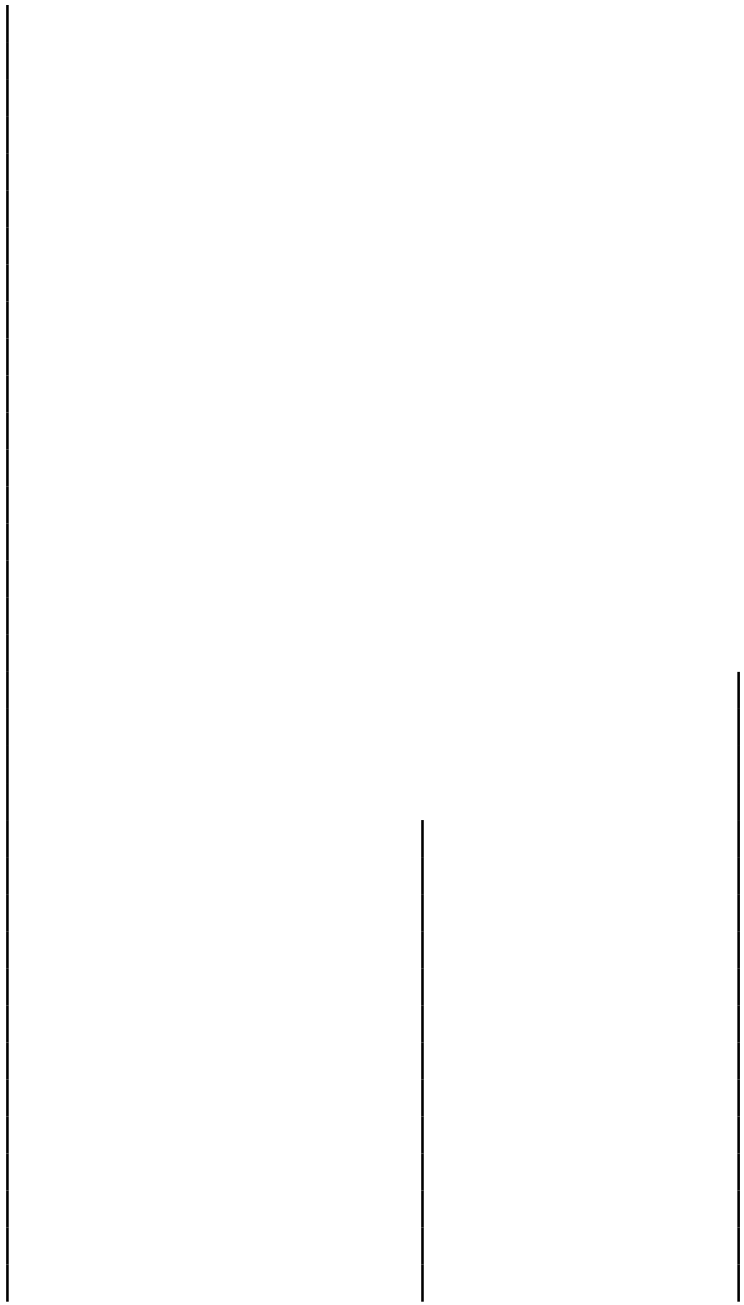
4.1. **BAT conclusions for the physico-chemical treatment of solid and/or pasty waste**		
4.1.1. Overall environmental performance	BAT 40.	In order to improve the overall environmental performance, BAT is to monitor the waste input as part of the waste pre-acceptance and acceptance procedures (see BAT 2). *Description* Monitoring the waste input, e.g. in terms of: - content of organics, oxidising agents, metals (e.g. mercury), salts, odorous compounds; - H2 formation potential upon mixing of flue-gas treatment residues, e.g. fly ashes, with water
	BAT 41.	In order to reduce emissions of dust, organic compounds and NH3 to air, BAT is to apply BAT 14d and to use one or a combination of the techniques given below. **a.** Adsorption **b.** Biofilter **c.** Fabric filter **d.** Wet scrubbing See Table 6.8 for BAT-associated emission level (BAT-AEL) for channelled emissions of dust to air from the physico-chemical treatment of solid and/or pasy waste.
4.2. **BAT conclusions for the re-refining of waste oil**		
4.2.1. Overall environmental performance	BAT 42.	In order to improve the overall environmental performance, BAT is to monitor the waste input as part of the waste pre-acceptance and acceptance procedures (see BAT 2). *Description* Monitoring of the waste input in terms of content of chlorinated compounds (e.g. chlorinated solvents or PCBs)
	BAT 43.	In order to reduce the quantity of waste sent for disposal, BAT is to use one or both of the techniques given below. **a.** Material recovery

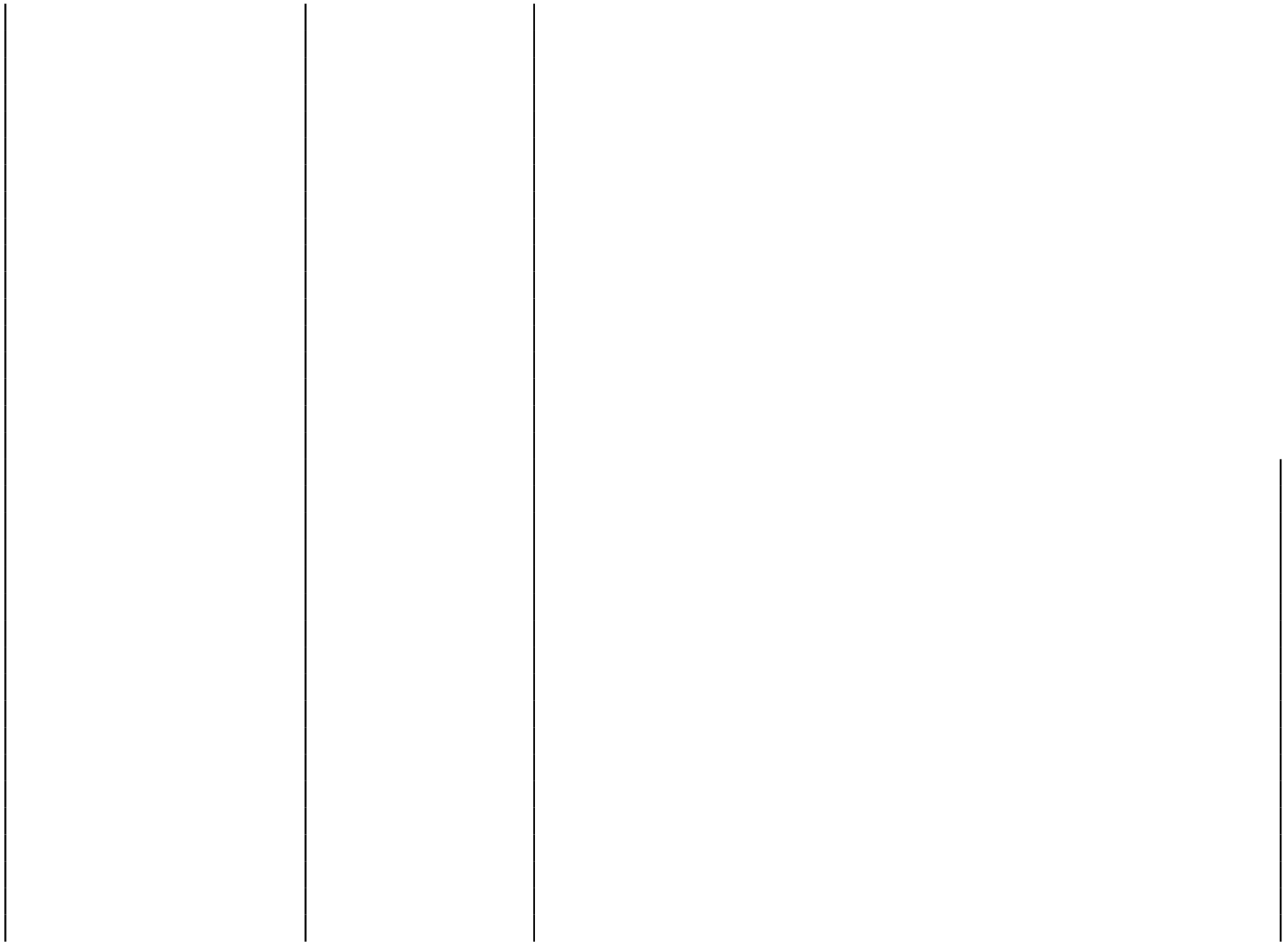
		b. Energy recovery
4.2.2. Emissions to air	BAT 44.	In order to reduce emissions of organic compounds to air, BAT is to apply BAT 14d and to use one or a combination of the techniques given below. **a.** Adsorption **b.** Thermal oxidation **c.** Wet scrubbing The BAT-AEL set in Section 4.5 applies. The associated monitoring is given in BAT 8.
4.3. **BAT conclusions for the physico-chemical treatment of waste with calorific value**		
4.3.1. Emissions to air	BAT 45.	In order to reduce emissions of organic compounds to air, BAT is to apply BAT 14d and to use one or a combination of the techniques given below. **a.** Adsorption **b.** Cryogenic condensation **c.** Thermal oxidation **d.** Wet scrubbing The BAT-AEL set in Section 4.5 applies. The associated monitoring is given in BAT 8.
4.4. **BAT conclusions for the regeneration of spent solvents**		
4.4.1. Overall environmental performance	BAT 46.	In order to improve the overall environmental performance of the regeneration of spent solvents, BAT is to use one or both of the techniques given below. **a.** Material recovery **b.** Energy recovery
4.4.2. Emissions to air	BAT 47.	In order to reduce emissions of organic compounds to air, BAT is to apply BAT 14d and to use a combination of the techniques given below. **a.** Recirculation of process off-gases in a steam boiler **b.** Adsorption **c.** Thermal oxidation **d.** Condensation or cryogenic condensation **e.** Wet scrubbing

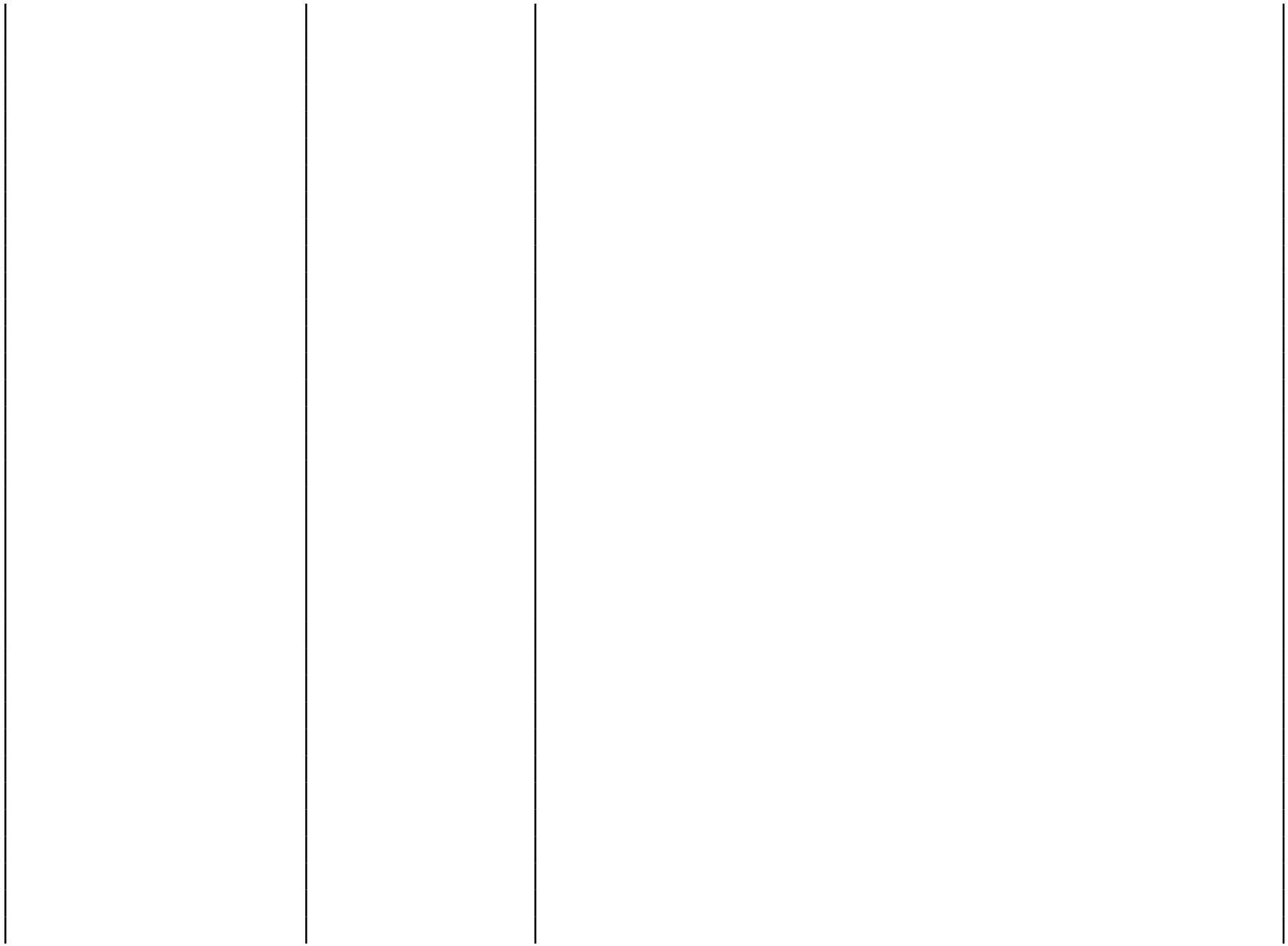
		The BAT-AEL set in Section 4.5 applies. The associated monitoring is given in BAT 8.
4.5. **BAT-AEL for emissions of organic compounds to air from the re-refining of waste oil, the physico- chemical treatment of waste with calorific value and the regeneration of spent solvents**		See Table 6.9 for BAT-associated emission level (BAT-AEL) for channelled emissions of TVOC to air from the re-refining of waste oil, the physico-chemical treatment of waste with calorific value and the regenration of spent solvents.
4.6. **BAT conclusions for the thermal treatment of spent activated carbon, waste catalysts and excavated contaminated soil**		
4.6.1. Overall environmental performance	BAT 48.	In order to improve the overall environmental performance of the thermal treatment of spent activated carbon, waste catalysts and excavated contaminated soil, BAT is to use all of the techniques given below. **a.** Heat recovery from the furnace off-gas **b.** Indirectly fired furnace **c.** Process-integrated techniques to reduce emissions to air
4.6.2. Emissions to air	BAT 49.	In order to reduce emissions of HCl, HF, dust and organic compounds to air, BAT is to apply BAT 14d and to use one or a combination of the techniques given below. **a.** Cyclone **b.** Electrostatic precipitator (ESP) **c.** Fabric filter **d.** Wet scrubbing **e.** Adsorption **f.** Condensation **g.** Thermal oxidation The associated monitoring is given in BAT 8.
4.7. **BAT conclusions for the water washing of excavated contaminated soil**		

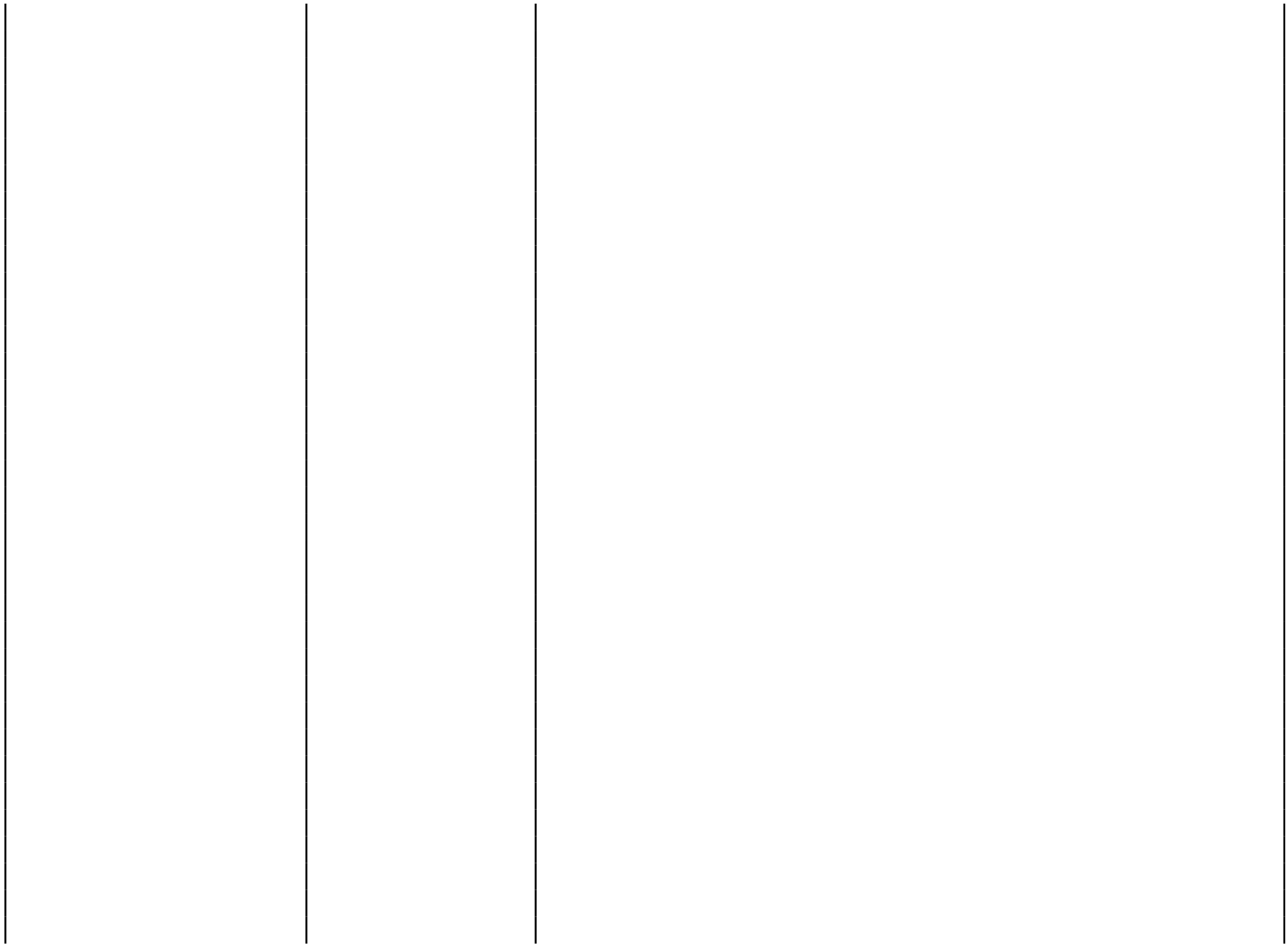
4.7.1. Emissions to air	BAT 50.	In order to reduce emissions of dust and organic compounds to air from the storage, handling, and washing steps, BAT is to apply BAT 14d and to use one or a combination of the techniques given below. **a.** Adsorption **b.** Fabric filter **c.** Wet scrubbing The associated monitoring is given in BAT 8.
4.8. **BAT conclusions for the decontamination of equipment containing PCBs**		
4.8.1. Overall environmental performance	BAT 51.	In order to improve the overall environmental performance and to reduce channelled emissions of PCBs and organic compounds to air, BAT is to use all of the techniques given below. **a.** Coating of the storage and treatment areas **b.** Implementation of staff access rules to prevent dispersion of contamination **c.** Optimised equipment cleaning and drainage **d.** Control and monitoring of emissions to air **e.** Disposal of waste treatment residues **f.** Recovery of solvent when solvent washing is used The associated monitoring is given in BAT 8.
5. BAT CONCLUSIONS FOR THE TREATMENT OF WATER-BASED LIQUID WASTE		Unless otherwise stated, the BAT conclusions presented in Section 5 apply to the treatment of water-based liquid waste, and in addition to the general BAT conclusions in Section 1.
5.1. **Overall environmental performance**	BAT 52.	In order to improve the overall environmental performance, BAT is to monitor the waste input as part of the waste pre-acceptance and acceptance procedures (see BAT 2). *Description* Monitoring the waste input, e.g. in terms of: - bioeliminability (e.g. BOD, BOD to COD ratio, Zahn-Wellens test, biological inhibition potential (e.g. inhibition of activated sludge)); - feasibility of emulsion breaking, e.g. by means of laboratory-scale tests
5.2. **Emissions to air**	BAT 53.	In order to reduce emissions of HCl, NH3 and organic compounds to air, BAT is to apply BAT 14d and to use one or a combination of the techniques given below.

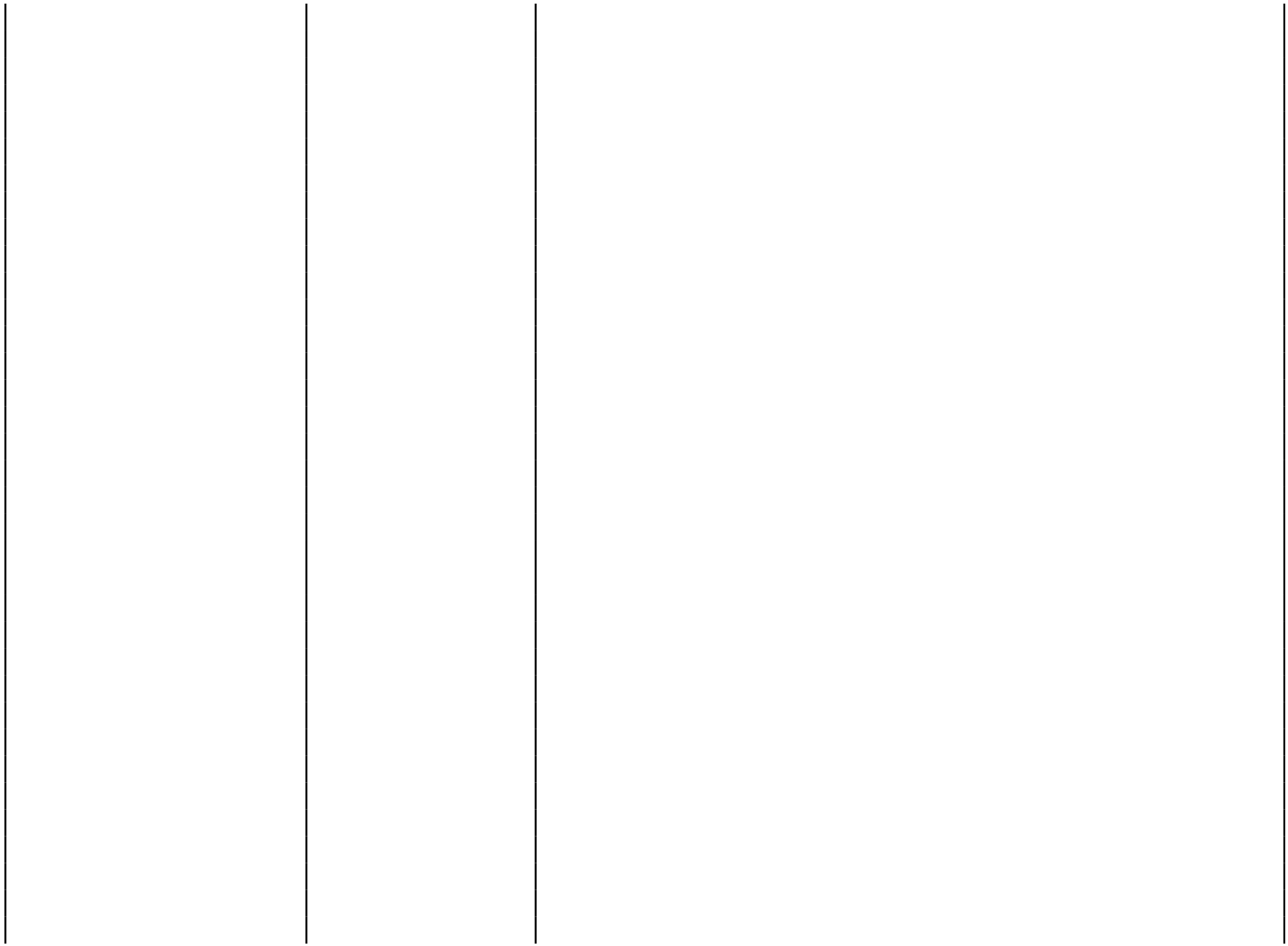
		a. Adsorption **b.** Biofilter **c.** Thermal oxidation **d.** Wet scrubbing See Table 6.10 for BAT-associated emission levels (BAT-AELs) for channelled emissions of HCl and TVOC to air from the treatment of water-based liquied waste.











Dato for innfylling:	**17.02.2020**
Driften er i tråd med dette punktet *- beskriv hvordan*	**Driften er ikke i tråd med dette punktet** *- beskriv hvorfor ikke, evt. angi om det ikke er aktuelt.*
ISO 14001 ISO 14 001 Internkontrollforskriften, ISO 14001	

Prosedyrer er lagt opp: a) beskrevet hvem/hva det gjelder for og hvem som er ansvarlig b) det foreligger en kompetansematrise og opplæring av nyansatt og videreutdanning/oppdatering gjennom året c) kommunikasjon innad og utad mot abonnentene. Deltakelse i diverse forum/seminar for å tilegne best/ny teknologi. kompetanseheving, kurs v/endring, ADR, prosedyre endring internt, opplæring d) blir involvert ved å være med å finne den beste løsningen og tilpasning av løsninger. øvelser. avvikssystemet e) styringssystemete landax/risk f) overvåkning, analyseprøver, varsler på gassanlegg, kontroll ved mottak, logging, veiing, overløpskontroll, veiledning g) løpende avtaler for kontroll og oppfølging; masksiner, vekt, gassnalegg, det elektriske, luftanelgget h) beredskapsplan, øvelser, kriseplan, industrivern, verneombud, hms ansvarlig, daglig leder i) samsvarsvurderinger med handlingsplaner		
a) Miljøkontrollprogrammet for gass og sigevanns-analyser, sigevannsmengder b) avvikssystemet c) avvikssystemet, logginger, rapporter, sjekklister, analyseresultater d) eksterne revisjoner (kiwa, FM, arbeidstilsynet, regnskapsrevisjoner, branntilsyn)		
Ledelsens gjennomgang		

Ved å følge de krav og lover som gjelder og endringer som kommer, f.eks. materialgjenvinning, krav til HMS i anbud; euro 6, elkjøretøy, støy/forurensing… Egne program for avslutninger av deponi, krav om etterdriftsfond Årlig benchmarking og kostra rapportering. Materialgjenvinningsskravet Følges opp av egenvurderingen Ikke relevant Beredskapsplan Avfall tas imot ihht gitt konsesjon, hvor det også er gitt krav til tid for mellomlagring, med spesielt fokus på matavfallsrenovasjon, samt omløpstid og renhold. Støy ihht konsesjon	Vibrasjoner: ikke aktuelt, ingen aktiviteter som fører til vibrasjoner
Basiskarakterisering gir bakgrunn for deponering, mens farlig avfall sorteres med bakgrunn i avfallsdeklarering og opplært personell, batterier sorteres etter batteritype, elektrisk avfall og ledninger skilles ut, lyspærer og lysstoffrør skilles ut, vinduer sorteres etter type, hvitevarer håndteres for seg og resten sorteres ved mottak i restavfall, deponering, hageavfall, plastemballasje, trevirke, metall, dekk med og uten felg, impregnert trevirke, gjenbruk, klær osv. Det godkjennes ihht konsesjon basert på innlevert basiskarakterisering og avfallsdeklarering, veiledning på gjenvinningsstasjon, prøvetaking og inspeksjon.	

Innveiing og logging i Scanveagt, avfallsdeklarering, innmelding til Ruteretur, innrapportering til Fylkesmannen, rapportering av kostra tall til ssb. ISO 14001 Avfallet sorteres i egne fraksjoner ved mottak og håndteres videre i egne fraksjoner. Aktuelt for farlig avfall, hvor det er krav til samlastinger iht ADR. Restavfall sorteres før videre behandling for å få ut uønskede fraksjoner, dekk sorteres før levering, avfall til deponering kontrolleres manuelt	
Kart over deponi med prøvepunkter og gass brønner Egenvurdering til Fylkesmannen Egenvurdering til Fylkesmannen c) Forbud mot deponering av organisk materiale, de andre fraksjonen sendes ut til videre behandling	

Meldes inn i egenvurderingen til Fylkesmannen.	
Utstyr og midlertidig lagring er tilpasset behovet, som containere (små/store/bunntømte/nedgravde), binger, bur, tønner, fat osv. Ihht konsesjon Tilpasset bruk av utstyr Eget mottak for farlig avfall.	
Opplært bemanning Avfall håndteres i egne nedstrømsfraksjoner Sikring av last og ihht gjeldende regelverk, blant annet ADR Egnede maskiner/utstyr	

Analyse- og overvåkningsprogram for overvåking av sigevann fra deponi.	
Analysene utføres etter en EN standard	
overvåkning av avfakling,	
Ikke aktuell	Ingen kjemisk eller fysisk behandling av løsemidler eller løsemiddelbaserte produkter.

Har ikke noe program for luktmåling. Tas hensyn til ved å ha hurtig omløpshastighet på avfallsfraksjoner. Klager på lukt meldes inn som avvik og følges opp. Det er ikke mottatt noen ekstern klage på lukt. Anses ikke å være et vesentlig miljøaspekt.	
Årlig forbruk av vann og strøm måles og følges opp av de respektive leverandørene for vann og strøm, inkludert kontroll av målerne.	

Se BAT 10.	
Fokus på redusert omløpstid. Ikke aktuelt. Forbud mot deponering av organisk materiale. Aktuelle prosesser involverer tiførsel av luft.	Det foregår ingen behandling av avfall ved tilføring av kjemikalier.
Overdekking av avfall. Vedlikeholdsprogram ihht gjeldende krav. Ihht vedlikeholdsprogrammet. Er redusert ved overdekking, begrensing av deponimengde, forbud mot deponering av organisk materiale og tilpasset anlegg mhp antall brønner og plassering av disse.	

Befuktning av avfall og infrastruktur etter behov i perioder med mye tørke. Eget vedlikeholdsprogram utføres av leverandør for anlegget. Skadet utstyr/skade på utstyr repareres fortløpende. Renhold av områder og utstyr utføres ihht arbeidsmiljø og internkontrollen. Deponigass anlegget overvåkes online daglig. Ved unormal drift starter alarmen.	
Anlegget er forskriftsmessig utformet. Anlegget styres onlie og er tilkoblet alarm.	
Utstyret overvåkes kontinuerlig og tilpasset anlegget. Avfakling logges.	
Støy er regulert i konsesjonen.	

Se BAT 17.	
Overvannet er ledet i egne rør utenom sigevannet. Dette videreføres under utbygging. Det er ingen resirkulering av vann per i dag. Det er ønskelig med tette dekker som asfalt og betong, derfor er det planlagt asfaltering og støping av flere områder. Det bygges en overvannsdam for kontroll av vannmengde ut i bekk. Enkelte fraksjoner er under tak, i lukket beholder eller foregår i hall, og det er planlagt mer innbygging av aktiviteter i hall eller med klimavern på en eller flere sider. Overvann og sigevann er fraskilte strømmer. Vann fra vaskehall går via oljeutskiller. Området er regulert med flere kummer og rørkoblinger. Årlig rengjøring og vedlikehold av kummer for å forebygge lekkasjer. Overvannsdammen vil kunne bufre vannet ved store nedbørsmengder.	

Det er montert oljeutskiller ved vaskehall og farlig avfallsmottak. Sigevannet sendes til AHSA renseanlegg.	
Sigevannet sendes til AHSA renseanlegg.	
Sigevannet sendes til AHSA renseanlegg. Sigevannet sendes til AHSA renseanlegg.	
Sigevannsedimentet skilles ut og sendes ikke videre.	
Kontinuerlig målinger og egenrapportering til Fylkesmannen. Internkontrollforskriften, ISO 14401 sertifisert, Industrivernpliktig	

Landax avvikssystem	
Gjenbruk av innkomne lettforurensede massser, asfalt og betong til intern infrastruktur.	
Ingen energikrevende prosesser. Energien fra deponi samles og brukes til oppvarming. Energirelaterte aktiviteter vurderes i anbudsprosesser.	
For EE-avfall brukes egne bur og kasser som går i sirkulasjon. Det samme gjelder farlig avfall, der det er mulig å gjenbruke emballasje. Utstrakt bruk av paller og pallekarmer. Det er etablert et system for reparasjon av renovasjonsbeholdere.	

Ikke relevant Ikke relevant Ikke relevant Ved behov vannes avfallet under kverning.	
Ikke relevant	
Ikke relevant	

Ikke relevant	
Ikke relevant da EE-avfall sendes til videre behandling.	
Ikke relevant	
Ikke relevant	

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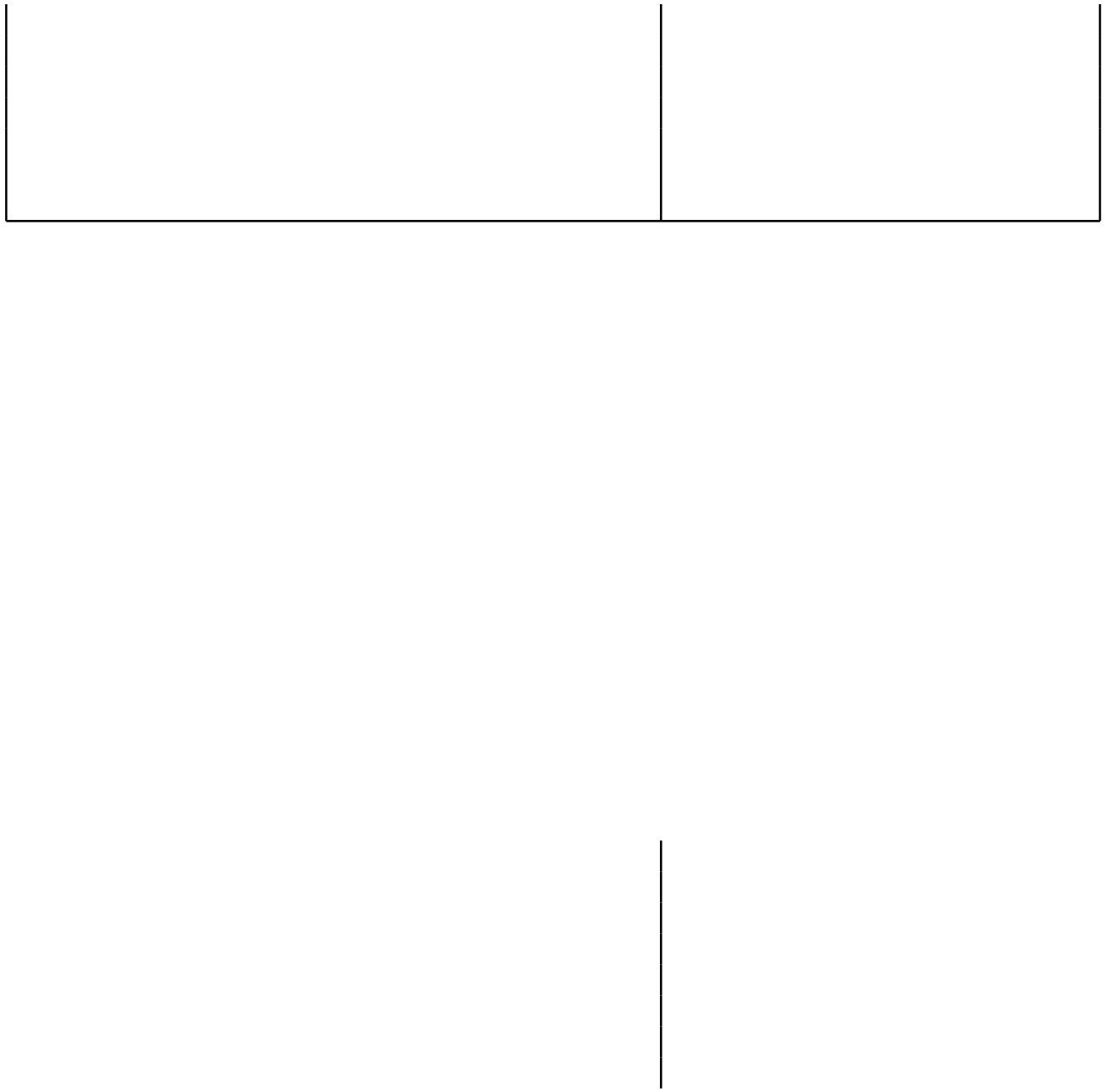

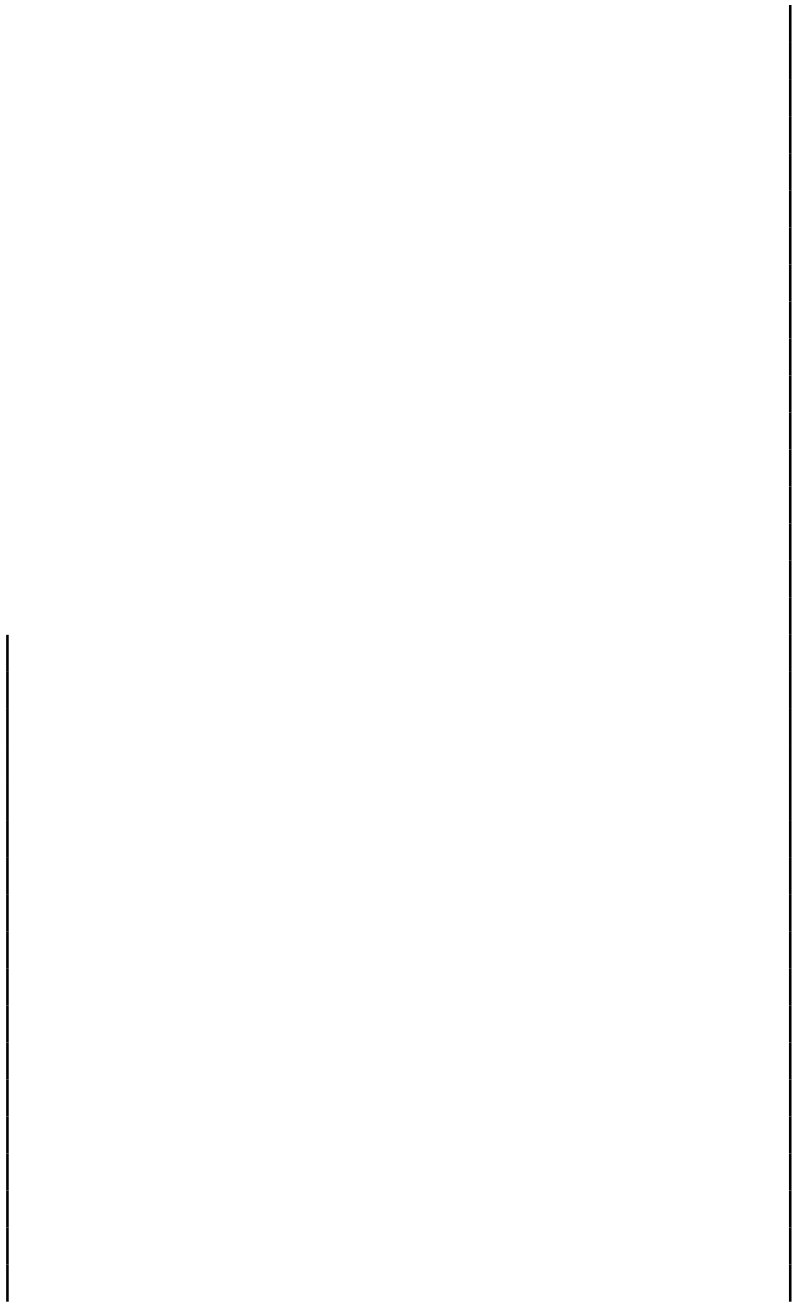

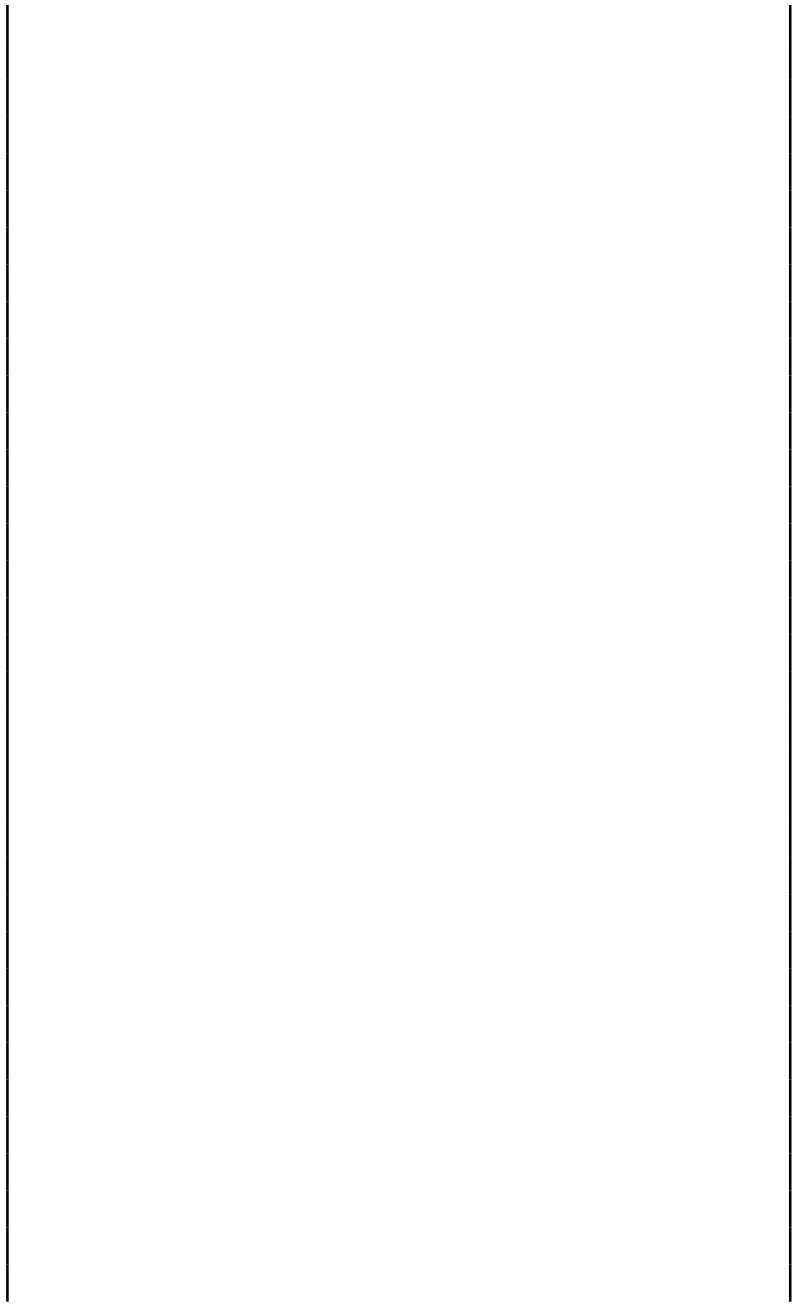

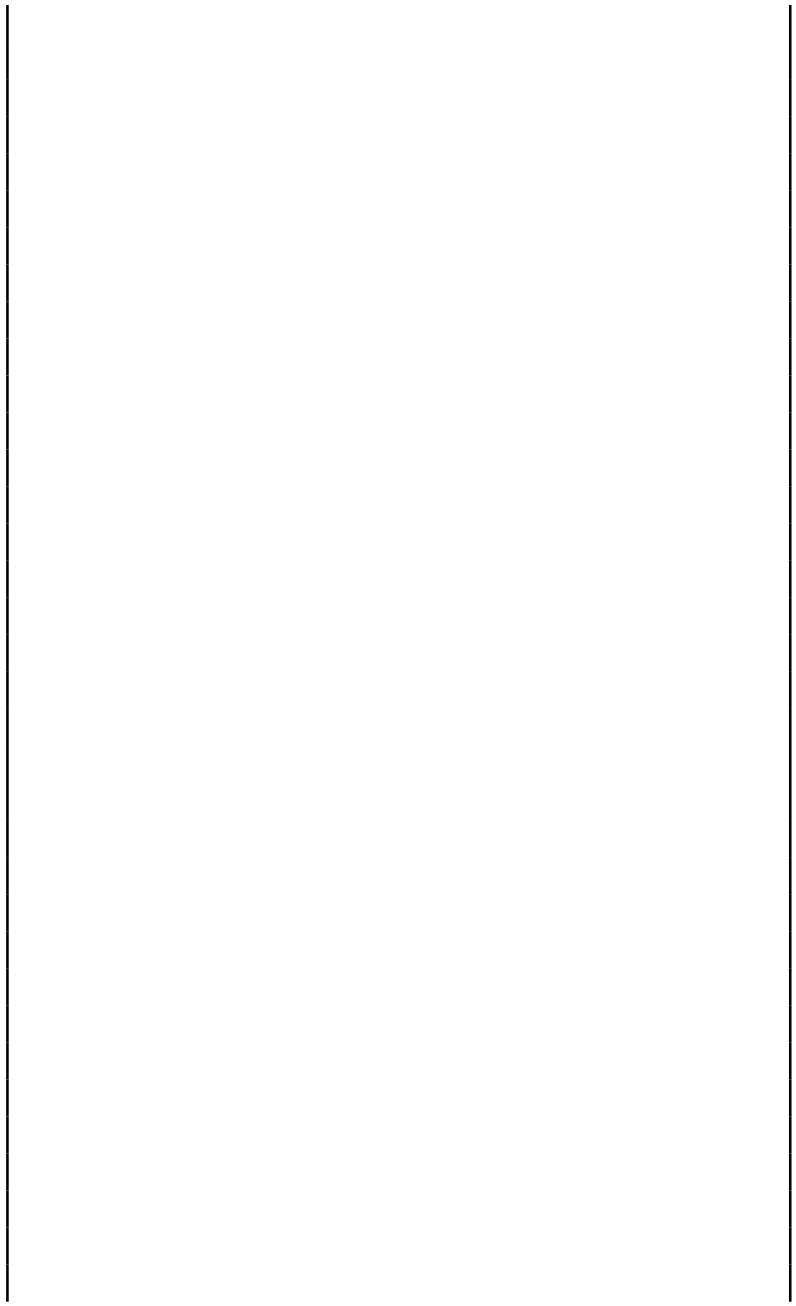

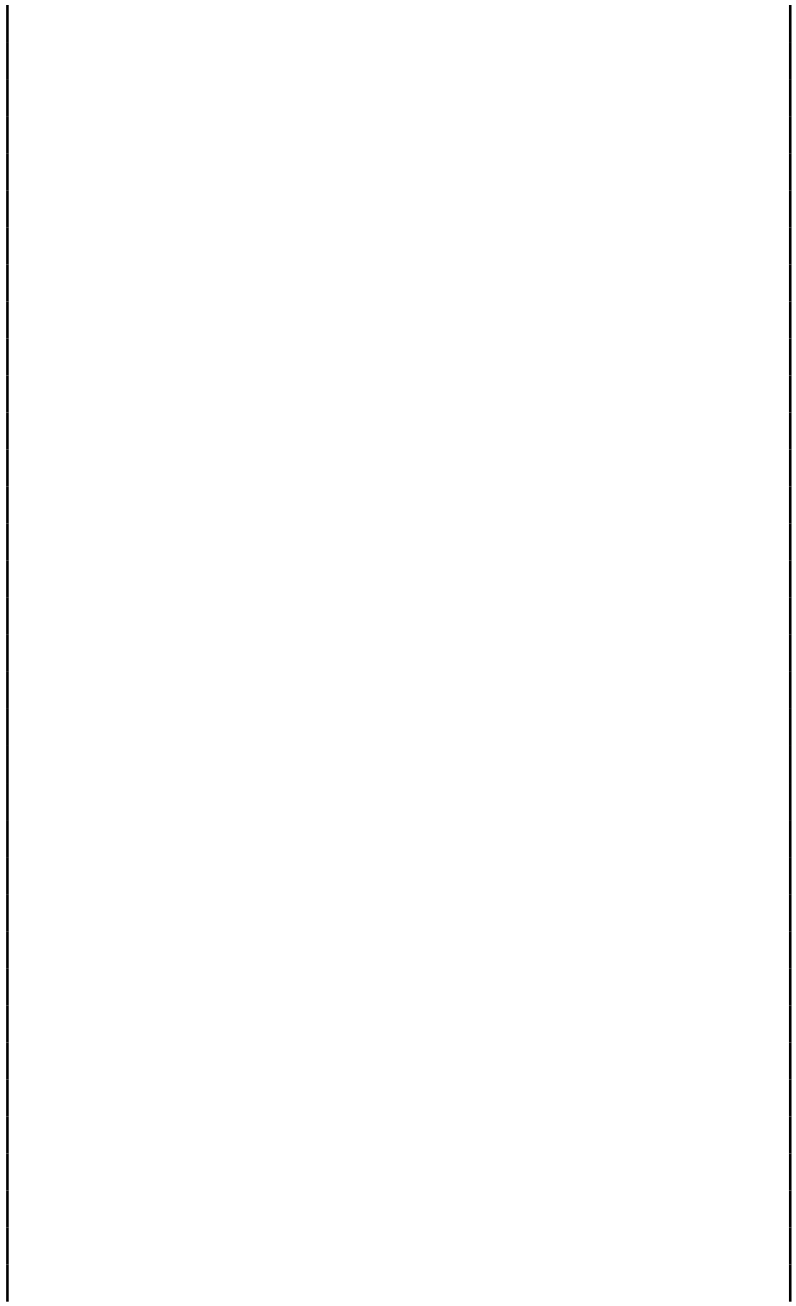

Table 6.1

Table 6.1

BAT-associated emission levels (BAT-AELs) for direct discharges to a receiving water body

Substance/Parameter	BAT-AEL (1)	Waste treatment process to which the BAT-AEL applies
Total organic carbon (TOC) (2)	10-60 mg/l	— All waste treatments except treatment of water-based liquid waste
	10-100 mg/l (3) (4)	— Treatment of water-based liquid waste
Chemical oxygen demand (COD) (2)	30-180 mg/l	— All waste treatments except treatment of water-based liquid waste
	30-300 mg/l (3) (4)	— Treatment of water-based liquid waste
Total suspended solids (TSS)	5-60 mg/l	— All waste treatments
Hydrocarbon oil index (HOI)	0,5-10 mg/l	— Mechanical treatment in shredders of metal waste — Treatment of WEEE containing VFCs and/or VHCs — Re-refining of waste oil — Physico-chemical treatment of waste with calorific value — Water washing of excavated contaminated soil — Treatment of water-based liquid waste
Total nitrogen (Total N)	1-25 mg/l (5) (6)	— Biological treatment of waste — Re-refining of waste oil
	10-60 mg/l (5) (6) (7)	— Treatment of water-based liquid waste
Total phosphorus (Total P)	0,3-2 mg/l	— Biological treatment of waste
	1-3 mg/l (4)	— Treatment of water-based liquid waste
Phenol index	0,05-0,2 mg/l	— Re-refining of waste oil — Physico-chemical treatment of waste with calorific value
	0,05-0,3 mg/l	— Treatment of water-based liquid waste
Free cyanide (CN^-) (8)	0,02-0,1 mg/l	— Treatment of water-based liquid waste
Adsorbable organically bound halogens (AOX) (9)	0,2-1 mg/l	— Treatment of water-based liquid waste
Substance/Parameter	BAT-AEL (1)	Waste treatment process to which the BAT-AEL applies

			applies
	Arsenic (expressed as As)	0,01-0,05 mg/l	— Mechanical treatment in shredders of metal waste — Treatment of WEEE containing VFCs and/or VHCs — Mechanical biological treatment of waste — Re-refining of waste oil — Physico-chemical treatment of waste with calorific value — Physico-chemical treatment of solid and/or pasty waste — Regeneration of spent solvents — Water washing of excavated contaminated soil
	Cadmium (expressed as Cd)	0,01-0,05 mg/l	
	Chromium (expressed as Cr)	0,01-0,15 mg/l	
	Copper (expressed as Cu)	0,05-0,5 mg/l	
	Lead (expressed as Pb)	0,05-0,1 mg/l [9]	
	Nickel (expressed as Ni)	0,05-0,5 mg/l	
	Mercury (expressed as Hg)	0,5-5 µg/l	
	Zinc (expressed as Zn)	0,1-1 mg/l [10]	
Metals and metalloids [8]	Arsenic (expressed as As)	0,01-0,1 mg/l	— Treatment of water-based liquid waste
	Cadmium (expressed as Cd)	0,01-0,1 mg/l	
	Chromium (expressed as Cr)	0,01-0,3 mg/l	
	Hexavalent chromium (expressed as Cr(VI))	0,01-0,1 mg/l	
	Copper (expressed as Cu)	0,05-0,5 mg/l	
	Lead (expressed as Pb)	0,05-0,3 mg/l	
	Nickel (expressed as Ni)	0,05-1 mg/l	
	Mercury (expressed as Hg)	1-10 µg/l	
	Zinc (expressed as Zn)	0,1-2 mg/l	

(1) The averaging periods are defined in the General considerations.
(2) Either the BAT-AEL for COD or the BAT-AEL for TOC applies. TOC monitoring is the preferred option because it does not rely on the use of very toxic compounds.
(3) The upper end of the range may not apply:
— when the abatement efficiency is ≥ 95 % as a rolling yearly average and the waste input shows the following characteristics: TOC > 2 g/l (or COD > 6 g/l) as a daily average and a high proportion of refractory organic compounds (i.e. which are difficult to biodegrade); or
— in the case of high chloride concentrations (e.g. above 5 g/l in the waste input).
(4) The BAT-AEL may not apply to plants treating drilling muds/cuttings.
(5) The BAT-AEL may not apply when the temperature of the waste water is low (e.g. below 12 °C).
(6) The BAT-AEL may not apply in the case of high chloride concentrations (e.g. above 10 g/l in the waste input).
(7) The BAT-AEL only applies when biological treatment of waste water is used.
(8) The BAT-AELs only apply when the substance concerned is identified as relevant in the waste water inventory mentioned in BAT 3.
(9) The upper end of the range is 0,3 mg/l for mechanical treatment in shredders of metal waste.
(10) The upper end of the range is 2 mg/l for mechanical treatment in shredders of metal waste.

The associated monitoring is given in BAT 7.

Table 6.2

Table 6.2

BAT-associated emission levels (BAT-AELs) for indirect discharges to a receiving water body

Substance/Parameter		BAT-AEL (1) (2)	Waste treatment process to which the BAT-AEL applies
Hydrocarbon oil index (HOI)		0,5-10 mg/l	— Mechanical treatment in shredders of metal waste — Treatment of WEEE containing VFCs and/or VHCs — Re-refining of waste oil — Physico-chemical treatment of waste with calorific value — Water washing of excavated contaminated soil — Treatment of water-based liquid waste
Free cyanide (CN-) (3)		0,02-0,1 mg/l	— Treatment of water-based liquid waste
Adsorbable organically bound halogens (AOX) (3)		0,2-1 mg/l	— Treatment of water-based liquid waste
Metals and metalloids (3)	Arsenic (expressed as As)	0,01-0,05 mg/l	— Mechanical treatment in shredders of metal waste — Treatment of WEEE containing VFCs and/or VHCs — Mechanical biological treatment of waste — Re-refining of waste oil — Physico-chemical treatment of waste with calorific value — Physico-chemical treatment of solid and/or pasty waste — Regeneration of spent solvents — Water washing of excavated contaminated soil
	Cadmium (expressed as Cd)	0,01-0,05 mg/l	
	Chromium (expressed as Cr)	0,01-0,15 mg/l	
	Copper (expressed as Cu)	0,05-0,5 mg/l	
	Lead (expressed as Pb)	0,05-0,1 mg/l (4)	
	Nickel (expressed as Ni)	0,05-0,5 mg/l	
	Mercury (expressed as Hg)	0,5-5 µg/l	
	Zinc (expressed as Zn)	0,1-1 mg/l (5)	
	Arsenic (expressed as As)	0,01-0,1 mg/l	— Treatment of water-based liquid waste
	Cadmium (expressed as Cd)	0,01-0,1 mg/l	
	Chromium (expressed	0,01-0,3 mg/l	

Substance/Parameter		BAT-AEL (1) (2)	Waste treatment process to which the BAT-AEL applies
	Hexavalent chromium (expressed as Cr(VI))	0,01-0,1 mg/l	

Copper (expressed as Cu)	0,05-0,5 mg/l
Lead (expressed as Pb)	0,05-0,3 mg/l
Nickel (expressed as Ni)	0,05-1 mg/l
Mercury (expressed as Hg)	1-10 µg/l
Zinc (expressed as Zn)	0,1-2 mg/l

(1) The averaging periods are defined in the General considerations.
(2) The BAT-AELs may not apply if the downstream waste water treatment plant abates the pollutants concerned, provided this does not lead to a higher level of pollution in the environment.
(3) The BAT-AELs only apply when the substance concerned is identified as relevant in the waste water inventory mentioned in BAT 3.
(4) The upper end of the range is 0,3 mg/l for mechanical treatment in shredders of metal waste.
(5) The upper end of the range is 2 mg/l for mechanical treatment in shredders of metal waste.

The associated monitoring is given in BAT 7.

Table 6.3

Table 6.3

BAT-associated emission level (BAT-AEL) for channelled dust emissions to air from the mechanical treatment of waste

Parameter	Unit	BAT-AEL (Average over the sampling period)
Dust	mg/Nm³	2-5 (1)

(1) When a fabric filter is not applicable, the upper end of the range is 10 mg/Nm³.

The associated monitoring is given in BAT 8.

Table 6.4

Table 6.4

BAT-associated emission levels (BAT-AELs) for channelled TVOC and CFC emissions to air from the treatment of WEEE containing VFCs and/or VHCs

Parameter	Unit	BAT-AEL (Average over the sampling period)
TVOC	mg/Nm³	3-15
CFCs	mg/Nm³	0,5-10

The associated monitoring is given in BAT 8.

Table 6.5

Table 6.5

BAT-associated emission level (BAT-AEL) for channelled TVOC emissions to air from the mechanical treatment of waste with calorific value

Parameter	Unit	BAT-AEL (Average over the sampling period)
TVOC	mg/Nm^3	10-30 (1)

(1) The BAT-AEL only applies when organic compounds are identified as relevant in the waste gas stream, based on the inventory mentioned in BAT 3.

Table 6.6

Table 6.6

BAT-associated emission level (BAT-AEL) for channelled mercury emissions to air from the mechanical treatment of WEEE containing mercury

Parameter	Unit	BAT-AEL (Average over the sampling period)
Mercury (Hg)	µg/Nm³	2-7

The associated monitoring is given in BAT 8.

Table 6.7

Table 6.7

BAT-associated emission levels (BAT-AELs) for channelled NH_3, odour, dust and TVOC emissions to air from the biological treatment of waste

Parameter	Unit	BAT-AEL (Average over the sampling period)	Waste treatment process
NH_3 (1) (2)	mg/Nm³	0,3-20	All biological treatments of waste
Odour concentration (1) (2)	ou_E/Nm³	200-1 000	
Dust	mg/Nm³	2-5	Mechanical biological treatment of waste
TVOC	mg/Nm³	5-40 (3)	

(1) Either the BAT-AEL for NH_3 or the BAT-AEL for the odour concentration applies.
(2) This BAT-AEL does not apply to the treatment of waste mainly composed of manure.
(3) The lower end of the range can be achieved by using thermal oxidation.

The associated monitoring is given in BAT 8.

Table 6.8

Table 6.8

BAT-associated emission level (BAT-AEL) for channelled emissions of dust to air from the physico-chemical treatment of solid and/or pasty waste

Parameter	Unit	BAT-AEL (Average over the sampling period)
Dust	mg/Nm³	2-5

The associated monitoring is given in BAT 8.

Table 6.9

Table 6.9

BAT-associated emission level (BAT-AEL) for channelled emissions of TVOC to air from the re-refining of waste oil, the physico-chemical treatment of waste with calorific value and the regeneration of spent solvents

Parameter	Unit	BAT-AEL (1) (Average over the sampling period)
TVOC	mg/Nm^3	5-30

(1) The BAT-AEL does not apply when the emission load is below 2 kg/h at the emission point provided that no CMR substances are identified as relevant in the waste gas stream, based on the inventory mentioned in BAT 3.

Table 6.10

Table 6.10

BAT-associated emission levels (BAT-AELs) for channelled emissions of HCl and TVOC to air from the treatment of water-based liquid waste

Parameter	Unit	BAT-AEL (1) (Average over the sampling period)
Hydrogen chloride (HCl)	mg/Nm³	1-5
TVOC		3-20 (2)

(1) These BAT-AELs only apply when the substance concerned is identified as relevant in the waste gas stream, based on the inventory mentioned in BAT 3.
(2) The upper end of the range is 45 mg/Nm³ when the emission load is below 0,5 kg/h at the emission point.

The associated monitoring is given in BAT 8.

BAT 7.

Substance/parameter	Standard(s)	Waste treatment process	Minimum monitoring frequency (1) (2)	a
Adsorbable organically bound halogens (AOX) (3) (4)	EN ISO 9562	Treatment of water-based liquid waste	Once every day	
Benzene, toluene, ethylbenzene, xylene (BTEX) (3) (4)	EN ISO 15680	Treatment of water-based liquid waste	Once every month	
Chemical oxygen demand (COD) (5) (6)	No EN standard available	All waste treatments except treatment of water-based liquid waste	Once every month	
		Treatment of water-based liquid waste	Once every day	
Free cyanide (CN^-) (3) (4)	Various EN standards available (i.e. EN ISO 14403-1 and -2)	Treatment of water-based liquid waste	Once every day	
Hydrocarbon oil index (HOI) (4)	EN ISO 9377-2	Mechanical treatment in shredders of metal waste	Once every month	
		Treatment of WEEE containing VFCs and/or VHCs		
		Re-refining of waste oil		
		Physico-chemical treatment of waste with calorific value		
		Water washing of excavated contaminated soil		
		Treatment of water-based liquid waste	Once every day	

Substance/parameter	Standard(s)	Waste treatment process	Minimum monitoring frequency (1) (2)	a
Arsenic (As), Cadmium (Cd), Chromium (Cr), Copper (Cu), Nickel (Ni), Lead (Pb), Zinc (Zn) (3) (4)	Various EN standards available (e.g. EN ISO 11885, EN ISO 17294-2, EN ISO 15586)	Mechanical treatment in shredders of metal waste	Once every month	
		Treatment of WEEE containing VFCs and/or VHCs		
		Mechanical biological treatment of waste		
		Re-refining of waste oil		
		Physico-chemical treatment of waste with calorific value		
		Physico-chemical treatment of solid and/or pasty waste		

		and/or pasty waste	
		Regeneration of spent solvents	
		Water washing of excavated contaminated soil	
		Treatment of water-based liquid waste	Once every day
Manganese (Mn) (3) (4)		Treatment of water-based liquid waste	Once every day
Hexavalent chromium (Cr(VI)) (3) (4)	Various EN standards available (i.e. EN ISO 10304-3, EN ISO 23913)	Treatment of water-based liquid waste	Once every day
Mercury (Hg) (3) (4)	Various EN standards available (i.e. EN ISO 17852, EN ISO 12846)	Mechanical treatment in shredders of metal waste	Once every month
		Treatment of WEEE containing VFCs and/or VHCs	
		Mechanical biological treatment of waste	
		Re-refining of waste oil	
		Physico-chemical treatment of waste with calorific value	
		Physico-chemical treatment of solid and/or pasty waste	
		Regeneration of spent solvents	
		Water washing of excavated contaminated soil	
		Treatment of water-based liquid waste	Once every day

Substance/parameter	Standard(s)	Waste treatment process	Minimum monitoring frequency (1) (2)
PFOA (3)	No EN standard available	All waste treatments	Once every six months
PFOS (3)			
Phenol index (6)	EN ISO 14402	Re-refining of waste oil	Once every month
		Physico-chemical treatment of waste with calorific value	
		Treatment of water-based liquid waste	Once every day
Total nitrogen (Total N) (6)	EN 12260, EN ISO 11905-1	Biological treatment of waste	Once every month
		Re-refining of waste oil	

		Treatment of water-based liquid waste	Once every day
Total organic carbon (TOC) (5) (6)	EN 1484	All waste treatments except treatment of water-based liquid waste	Once every month
		Treatment of water-based liquid waste	Once every day
Total phosphorus (Total P) (6)	Various EN standards available (i.e. EN ISO 15681-1 and -2, EN ISO 6878, EN ISO 11885)	Biological treatment of waste	Once every month
		Treatment of water-based liquid waste	Once every day
Total suspended solids (TSS) (6)	EN 872	All waste treatments except treatment of water-based liquid waste	Once every month
		Treatment of water-based liquid waste	Once every day

(1) Monitoring frequencies may be reduced if the emission levels are proven to be sufficiently stable.
(2) In the case of batch discharge less frequent than the minimum monitoring frequency, monitoring is carried out once per batch.
(3) The monitoring only applies when the substance concerned is identified as relevant in the waste water inventory mentioned in BA
(4) In the case of an indirect discharge to a receiving water body, the monitoring frequency may be reduced if the downstream waste plant abates the pollutants concerned.
(5) Either TOC or COD is monitored. TOC is the preferred option, because its monitoring does not rely on the use of very toxic comp
(6) The monitoring applies only in the case of a direct discharge to a receiving water body.

Monitoring associated with

BAT 20

Monitoring associated with

Monitoring associated with

T 3.
water treatment

pounds.

BAT 8.

Substance/Parameter	Standard(s)	Waste treatment process	Minimum monitoring frequency (1)	a
Brominated flame retardants (2)	No EN standard available	Mechanical treatment in shredders of metal waste	Once every year	

Substance/Parameter	Standard(s)	Waste treatment process	Minimum monitoring frequency (1)	a
CFCs	No EN standard available	Treatment of WEEE containing VFCs and/or VHCs	Once every six months	
Dioxin-like PCBs	EN 1948-1, -2, and -4 (3)	Mechanical treatment in shredders of metal waste (2)	Once every year	
		Decontamination of equipment containing PCBs	Once every three months	
Dust	EN 13284-1	Mechanical treatment of waste	Once every six months	
		Mechanical biological treatment of waste		
		Physico-chemical treatment of solid and/or pasty waste		
		Thermal treatment of spent activated carbon, waste catalysts and excavated contaminated soil		
		Water washing of excavated contaminated soil		
HCl	EN 1911	Thermal treatment of spent activated carbon, waste catalysts and excavated contaminated soil (2)	Once every six months	
		Treatment of water-based liquid waste (2)		
HF	No EN standard available	Thermal treatment of spent activated carbon, waste catalysts and excavated contaminated soil (2)	Once every six months	
Hg	EN 13211	Treatment of WEEE containing mercury	Once every three months	
H_2S	No EN standard available	Biological treatment of waste (4)	Once every six months	
Metals and metalloids except mercury (e.g. As, Cd, Co, Cr, Cu, Mn, Ni, Pb, Sb, Se, Tl, V) (5)	EN 14385	Mechanical treatment in shredders of metal waste	Once every year	
		Biological treatment of waste (4)	Once every six months	
	No EN standard	Physico-chemical treatment of solid		

NH_3	No EN standard available	Physico-chemical treatment of solid and/or pasty waste (2)	Once every six months	
		Treatment of water-based liquid waste (2)		

Substance/Parameter	Standard(s)	Waste treatment process	Minimum monitoring frequency (1)	a
Odour concentration	EN 13725	Biological treatment of waste (5)	Once every six months	
PCDD/F (3)	EN 1948-1, -2 and -3 (3)	Mechanical treatment in shredders of metal waste	Once every year	
TVOC	EN 12619	Mechanical treatment in shredders of metal waste	Once every six months	
		Treatment of WEEE containing VFCs and/or VHCs	Once every six months	
		Mechanical treatment of waste with calorific value (2)	Once every six months	
		Mechanical biological treatment of waste	Once every six months	
		Physico-chemical treatment of solid and/or pasty waste (2)	Once every six months	
		Re-refining of waste oil		
		Physico-chemical treatment of waste with calorific value		
		Regeneration of spent solvents		
		Thermal treatment of spent activated carbon, waste catalysts and excavated contaminated soil		
		Water washing of excavated contaminated soil		
		Treatment of water-based liquid waste (2)		
		Decontamination of equipment containing PCBs (6)	Once every three months	

(1) Monitoring frequencies may be reduced if the emission levels are proven to be sufficiently stable.
(2) The monitoring only applies when the substance concerned is identified as relevant in the waste gas stream based on the inventor BAT 3.
(3) Instead of EN 1948-1, sampling may also be carried out according to CEN/TS 1948-5.

(4) The odour concentration may be monitored instead.
(5) The monitoring of NH_3 and H_2S can be used as an alternative to the monitoring of the odour concentration.
(6) The monitoring only applies when solvent is used for cleaning the contaminated equipment.

Monitoring ıssociated with
BAT 25

Monitoring associated with
BAT 29
BAT 25
BAT 51
BAT 25
BAT 34
BAT 41
BAT 49
BAT 50
BAT 49
BAT 53
BAT 49
BAT 32
BAT 34
BAT 25
BAT 34

BAT 41
BAT 53
Monitoring associated with
BAT 34
BAT 25
BAT 25
BAT 29
BAT 31
BAT 34
BAT 41
BAT 44
BAT 45
BAT 47
BAT 49
BAT 50
BAT 53
BAT 51

ry mentioned in