

Disposal plan for biologically contaminated waste in the DBMR

1. Purpose

This disposal plan sets out rules for handling biologically contaminated waste. The inactivation of contaminated waste is a key aspect for minimizing the escape of organisms from the laboratory and thus preventing risks to people and the environment.

INACTIVATION TECHNIQUES WHICH MAY BE USED ARE VAPOUR STERILIZATION (AUTOCLAVING), CHEMICAL INACTIVATION AND (DRY) HEAT STERILIZATION.

THE FOLLOWING STEPS ARE IMPORTANT FOR THE ORGANIZATION OF WASTE INACTIVATION AND REMOVAL:

1. *DESCRIPTION OF THE WASTE AND THE NATURE OF COLLECTION*
2. *LABELLING*
3. *STORAGE*
4. *TRANSPORT*
5. *INACTIVATION (METHOD, EQUIPMENT)*
6. *DISPOSAL*

2. Disposal of biologically contaminated waste

2.1 Disposal of waste involving risk of injury (sharps) as special waste

Waste involving risk of injury (*sharps*) is not disposed of with the normal industrial waste, but as special waste. If it has come into contact with infectious material, it is first rendered inactive.

Coding according to VVS (VeVA) as special waste

LVA Code ¹	Waste description
18 01 01	Waste involving risk of injury (sharps)

¹ LVA: Lists for the Movement of Waste (Abfall-Code der Verordnung des UVEK vom 18. Oktober 2005 über Listen zum Verkehr mit Abfällen; SR 814.610.1)

ADR/SDR classification as dangerous goods:

Class	Category	UN number	PG ³	Exemption limit acc. to ADR - GGBV
6.2	B	3291	II	333 kg or litres

³ PG = Packing Group

2.2 Disposal plan for solid waste

	Solid waste	How	When / frequency	Who
Description of waste and collection	Principles of solid waste separation	Glass waste is to be collected separately from plastic waste and from waste involving risk of injury.		
	Contaminated consumables involving risk of injury (<i>sharps</i>): e.g. syringes, scalpels and injection needles	Collect in puncture-proof, non-transparent, dense plastic containers which can be closed tightly and, when closed, cannot be reopened.	As required, but before the point when collecting containers can no longer be closed safely.	
	Cultures of microorganisms (e.g. agar plates, plastic cell culture bottles with no culture medium)	Collect together or separately in autoclavable bags in strong, leak-proof, lidded containers.	As required or when bags are, at most, 2/3 full; do not compress!	
	Contaminated consumables with no risk of injury (pipette tips, plastic pipettes, Eppendorf tubes, plastic containers, disposable gloves)			
	Diagnostic samples (blood samples, secretions, excreta, tissue samples etc. in plastic tubes)			
Labelling	Label all waste containers or bags with the biohazard warning symbol. Wastes with a risk of injury must be labelled as such (e.g. "Beware needles"). A temperature-sensitive indicator must be attached to waste containers and bags before they are autoclaved.			
Storage	Temporary storage in the laboratory	Open containers and small bags (up to max. 2 litres) may be stored briefly in the bio-safety workbench, though they must be disposed of in bigger bio-safety bags at least once a week. Full, closed biohazard plastic bags are to be stored temporarily in a container.	Weekly	
Transport	Transport to the treatment site	Containers must be brought to the autoclave by the most direct route and the material must be inactivated without delay and without further temporary storage.	Weekly	

	Solid waste	How	When / frequency	Who
Inactivation	Charging the autoclave	The autoclave must be charged and operated by personnel with appropriate expertise.		
	Monitoring inactivation	Collect and archive autoclave logs.		
	Servicing the equipment	The autoclave must be serviced in accordance with the service plan.	At least once a year	
Disposal	Disposal of autoclaved waste	<p>Glass waste which is not a problem and is comparable with domestic waste (e.g. broken culture tubes) is disposed of with the industrial waste in suitable packing with the necessary safety precautions to prevent injuries (cuts).</p> <p>Waste involving risk of injury (<i>sharps</i>) is disposed of as special waste (see Chap. 2.1).</p> <p>Waste involving no risk of injury is to be disposed of with the normal industrial waste.</p> <p>Inactivated waste is only disposed of with the industrial waste when the “Biohazard” warning symbol is no longer visible. To this end, it is covered by a second layer of packaging.</p>		

2.3 Disposal plan for liquid waste

	Liquid waste (supernatant cultures)	How	When / frequency	Who
Description / collection	Principles of waste separation	Cell culture media and perfusion solutions are to be collected separately.		
	Types of containers	Suction bottles (e.g. 2-litre) are to be used for culture media; perfusion solutions are to be collected in plastic canisters (e.g. 10-litre). Collect supernatant media after centrifuging (e.g. in 1-litre bottles).		
Labelling	Labelling	A temperature-sensitive indicator must be attached to bottles containing culture media before inactivation.		
Storage	Temporary storage in the laboratory	Cell culture media and perfusion solutions are to be stored temporarily in a safe place in the laboratory prior to final disposal.		
Inactivation	On-site chemical inactivation (in the laboratory)	Cell culture waste is to be inactivated on-site with a suitable disinfectant (already prepared in a suction bottle).		
Transport	Transport to the treatment site	The waste must be taken to the autoclave by the most direct route and the material must be inactivated without delay and without further temporary storage.		
Inactivation	Charging the autoclave	The autoclave must be charged and operated by personnel with appropriate expertise (select special programme for liquids).		
	Monitoring inactivation	Collect and archive autoclave logs.		
	Servicing the autoclave	The autoclave must be serviced in accordance with the service plan.	At least once a year	
Disposal	Disposal of the inactivated waste	Inactivated liquid waste must be disposed off by way of the waste water from the building in compliance with the water protection legislation.	Weekly	

4. Disposal of revolting, nauseating or strong-smelling wastes¹

Very strong-smelling, nauseating or revolting wastes (waste containing blood etc.) are disposed of as special waste in accordance with VeVA.² Infectious waste is inactivated beforehand.

Coding according to VeVA³ as special waste:

LVA Code*	Waste description
18 01 02	Waste involving risk of contamination (e.g. tissue waste, waste containing blood, secretions and excreta, blood bags and banked blood)

* LVA: Lists for the Movement of Waste (Abfall-Code der Verordnung des UVEK vom 18. Oktober 2005 über Listen zum Verkehr mit Abfällen; SR 814.610.1)

ADR/SDR classification as dangerous goods:

Class	Category	UN number	PG*	Exemption limit acc. to ADR - GGBV
6.2	B	3291	II	333 kg or litres

* PG = Packing Group

5. Animal waste⁴

Waste from small animals arising from Class 2 activities according to the Containment Ordinance (Einschliessungsverordnung / ESV) and containing genetically modified or pathogenic organisms is, as a basic rule, inactivated on-site and then disposed of in accordance with the legislation on environmental protection or animal epidemics (depending on the nature of the waste, according to VTNP or according to VeVA.⁵

¹ IF NO SUCH WASTE IS PRODUCED IN THE PLANT, THE WHOLE OF THE CHAPTER CAN BE OMITTED.

² IN THIS REGARD, SEE PP 6 AND 7 OF THE STATEMENT OF THE SWISS EXPERT COMMITTEE FOR BIOSAFETY: WASTE DISPOSAL IN MEDICAL MICROBIOLOGY DIAGNOSTIC LABORATORIES, 10 PAGES, REVISED EDITION, AUGUST 2006; SWISS EXPERT COMMITTEE FOR BIOSAFETY, C/O SWISS AGENCY FOR THE ENVIRONMENT, CH-3003 BERNE; OBTAINABLE FROM: <http://www.efbs.admin.ch/> » DOCUMENTATION » STATEMENTS ON PERMIT APPLICATION » CLOSED SYSTEMS; OR DIRECT: http://www.efbs.admin.ch/uploads/media/e-empfehlung-abfallentsorgung-2006_02.pdf

³ ORDINANCE ON THE MOVEMENT OF WASTE (VERORDNUNG VOM 22. JUNI 2005 ÜBER DEN VERKEHR MIT ABFÄLLEN (VEVA, SR 814.610))
SEE: <http://www.bafu.admin.ch/> » TOPICS » WASTE » VERKEHR MIT ABFÄLLEN

⁴ IF NO ANIMAL WASTE IS PRODUCED IN THE PLANT, THE WHOLE OF THE CHAPTER CAN BE OMITTED.

⁵ THE MEASURES FOR IMPLEMENTATION OF THE CONTAINMENT ORDINANCE (EINSCHLIESSUNGSVERORDNUNG / ESV) FOR THE KEEPING OF ANIMALS, ESPECIALLY THE REQUIREMENTS FOR TRANSPORT AND DISPOSAL, ARE SET OUT MORE PRECISELY IN A DRAFT FOR A FOEN GUIDELINE (SICHERE TIERHALTUNG IN GESCHLOSSENEN SYSTEMEN NACH ESV, BUWAL; ENTWURF APRIL 2005). SEE: <http://www.bafu.admin.ch/> » TOPICS » BIOTECHNOLOGY » NATIONAL ACTIVITIES » CONTAINED USE » IMPLEMENTATION GUIDES FOR THE USE OF ORGANISMS.

IF THERE IS NO CHEMICAL OR RADIOACTIVE CONTAMINATION PRESENT AND THE WASTE IS INACTIVATED COMPLETELY BY MEANS OF A VALIDATED PROCESS, THIS WASTE CAN BE DISPOSED OF AS CATEGORY 1 ACCORDING TO THE ORDINANCE ON THE DISPOSAL OF ANIMAL BY-PRODUCTS (VERORDNUNG ÜBER DIE ENTSORGUNG VON TIERISCHEN NEBENPRODUKTEN / VTNP OF 23 JUNE 2004, SR 916.441.22). DISPOSAL AS SPECIAL WASTE ACCORDING TO VEVA IS POSSIBLE IN ALL CASES BECAUSE APPROPRIATE PROTECTION OF THE ENVIRONMENT IS ENSURED.

Temporary storage until disposal must take place under cool conditions (at least +4°C, ideally at -20°C) in a place which is only accessible to specialist staff.

For disposal and transport according to the animal epidemic legislation, the dead animals or parts thereof must be marked clearly, accompanied by a document containing information on the origin and nature of the material and its destination and incinerated in an authorized disposal facility (see Annex I to the Ordinance on the disposal of animal by-products (VTNP)).

For disposal and transport as special waste, an accompanying document (for small quantities a collective list) is made out according to VeVA and LVA as of 1 January 2006) and entries required under ADR are added to it or an additional ADR transport document is completed.

Coding according to VeVA as special waste

LVA Code*	Waste description
18 02 98	Animal waste involving risk of contamination (e.g. tissue waste, waste containing blood, secretions and excreta, blood bags and banked blood, contaminated carcasses of [test] animals)

* LVA: Lists for the Movement of Waste (Abfall-Code der Verordnung des UVEK vom 18. Oktober 2005 über Listen zum Verkehr mit Abfällen; SR 814.610.1)

ADR/SDR classification as dangerous goods

Class	Category	UN number	PG*	Description
6.2	B	3291	II	Clinical waste, unspecified, n.o.s. (animal waste)

* PG = Packing Group

6. Interfaces

With regard to the disposal of biologically contaminated waste, the interfaces with other safety and disposal concepts are regulated as follows:

- **Radioactivity:** Safety Level 2 biological waste containing radioactivity must first be rendered completely inactivate with sufficient disinfectant and then sent to the appropriate radioactive waste.
- **Chemicals:** Safety Level 2 biological waste containing toxic and carcinogenic chemicals must first be rendered completely inactive with sufficient disinfectant and then sent to the appropriate special waste.
- **Waste separation / recycling:** Wherever possible, the waste must be separated into various groups of substances. Reusable materials must be recycled.

<i>COMPILED / AUTHORIZED</i>	François Achermann, Safety DBMR
<i>DATE</i>	<i>September 10, 2018</i>