



PCB WASTE MANAGEMENT

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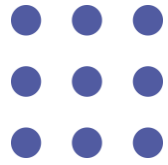
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STRUCTURE

- Waste sector
- Swiss waste legislation
- PCB as waste



WASTE SECTOR

WASTE SECTOR

4 mains prestations in waste management:

- **Contributing to Geneva State strategy**
- **Supervising and supporting**
- **Controlling**
- **Reporting**

WASTE SECTOR

Contributing to strategy:

- Drawing up master plans (waste, quarries/gravel pits, landfills)
- Drafting Cantonal laws
- Taking position on federal objects
- Commission de gestion globale des déchets

WASTE SECTOR

Supervising and supporting

- Sector-specific notice delivery
- Permits granting:
 - Waste treatment, landfill, gravel pits
 - Unpolluted excavated material exportation
- Expertise providing to the beneficiaries:
 - Working groups
 - Regulations
 - Directives
- Project management

WASTE SECTOR

Controlling

- Gravel pits
- Landfills
- Waste treatment facilities
- Construction sites
- Specific activities :
 - Wildfires
 - Composting
 - Medical laboratories
 - Garages...

WASTE SECTOR

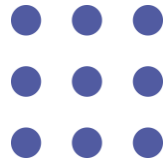
Reporting

- Annual waste production statistics

WASTE SECTOR

We are in contact with the entire civil society:

- Companies
- General public
- Members of parliament
- Municipalities
- Construction sites manager
- Engineer and architect firms
- ...

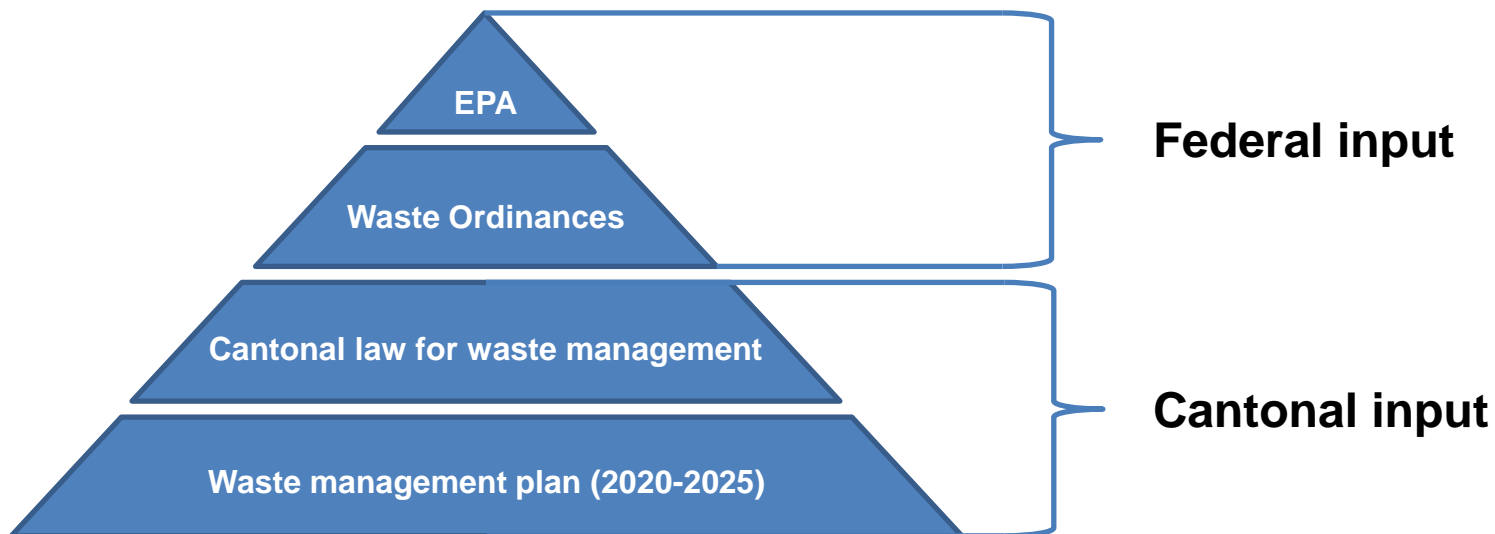


SWISS WASTE LEGISLATION

SWISS WASTE LEGISLATION

Pyramidal organization

- Federal Environmental Protection Act (EPA)
- Federal ordinances
- Cantonal laws
- Waste management plan



SWISS WASTE LEGISLATION

Federal act

Principles:

"protecting human being, animals, plants and there bioceses against harmful or annoying damages, preserving natural resources sustainably"



SWISS WASTE LEGISLATION

Federal act

Responsibilities:

Municipal waste => are to be disposed by the cantons

Other waste => are to be disposed by its holders



SWISS WASTE LEGISLATION

Federal act

Responsibilities:

Municipal waste => are to be disposed by the cantons

Other waste => are to be disposed by its holder

PCB waste enter the category "other waste"



SWISS WASTE LEGISLATION

Federal ordinances (main)

Ordinance on the Avoidance and the Disposal of waste (ADWO / OLED):

Ordinance on the movements of waste (OMoD)

Ordinance on the Remediation of Polluted Sites (CSO)

<https://www.fedlex.admin.ch/en/cc/internal-law/81>

=> 814.600 to 814.681



SWISS WASTE LEGISLATION

Ordinance on the Avoidance and the Disposal of waste

- Gives definition of waste
- **Mixing ban** : *"Waste of one types may not be mixed with other waste or with aggregates if this is primarily intended to reduce the pollutant or foreign substance content of the waste by dilution and thereby to comply with regulations on the consignment, recovery or landfill of waste"*



SWISS WASTE LEGISLATION

Ordinance on the Avoidance and the Disposal of waste

- General recovery obligation according to the state of art
- Information on the disposal of waste construction:
*The builder must **provide the authority** responsible with information on the nature, quality and quantity of the waste produced and on **the plans for its disposal** if [...] construction waste construction **containing substances that are hazardous** [...] such as PCBs*



SWISS WASTE LEGISLATION

Ordinance on the Avoidance and the Disposal of waste

- Separation of construction waste: *special waste must be separated and disposed of separately from other waste*



SWISS WASTE LEGISLATION

Ordinance on the Avoidance and the Disposal of waste

- Landfilling of waste :
 - Regulation and restrictions to the construction and the exploitation of landfills
 - Different types of landfills (A / B / C / D / E)
- Facilities for the incineration of waste



SWISS WASTE LEGISLATION

Ordinance on the movements of waste



SWISS WASTE LEGISLATION

Ordinance on the movements of waste

It aims at regulating :

- Special waste movements in Switzerland
- Transboundary movement of waste
- Movements of special waste between other countries if a Swiss company organizes or participates to the movement

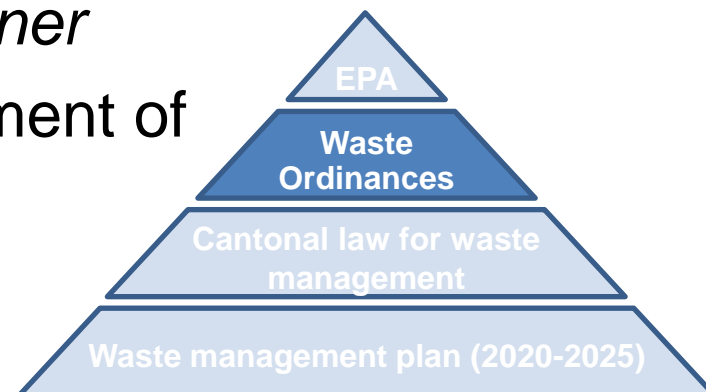


SWISS WASTE LEGISLATION

Ordinance on the movements of waste

It defines :

- Special waste: *waste that requires **specific technical and organizational measures** to be disposed of in an environmentally sound manner*
- Controlled waste: *waste that requires a **limited number of measures** to be disposed of in an environmentally sound manner*
- Controlled waste with document of movement



SWISS WASTE LEGISLATION

Ordinance on the movements of waste

- Obligation to establish a waste tracking document for its movement, exceptions for:
 - quantities < 50kg
 - return to seller (products unsealed)





DOCUMENT DE SUIVI POUR LES MOUVEMENTS DE DÉCHETS EN SUISSE

N°: BBxxxxxxx



1 WASTE GENERATOR Name: Adress:		N° d'identification OMoD: _____ Personne de contact: N° tél.:
2 WASTE DESCRIPTION Description according to the waste list, with additional details if necessary to ensure disposal safety and environmental protection.		Waste code: _____ Weight: _____ kg Quantité: ^{1) 2)} _____ litres Transport de grandes quantités: ³⁾ oui <input type="checkbox"/> Type d'emballage: ^{1) 4)} _____ Number of packages: Shipping date: Signature:
Hazardous merchandise according to ADR/SDR ou RID/RSD: <input type="checkbox"/> oui <input type="checkbox"/> non Remarques (p.ex. précisions relatives à l'ADR/SDR): ¹⁾		
3 ELIMINATION COMPANY Nom: Adresse: Signature de l'entreprise d'élimination: (après contrôle et réception des déchets) Date de réception des déchets:		N° d'identification OMoD: _____ Personne de contact: N° tél.:
4 CARRIER (nom, adresse)		Poids: _____ kg Procédé d'élimination: (voir au verso) Date de livraison des déchets:
5 TRANSBORDEMENT ET TRANSPORT PAR UN CENTRE LOGISTIQUE (annexe 1, ch. 1.2, let. b, OMoD)		
2. Transporteur (nom, adresse): Type de transport: ⁵⁾ Date de livraison: Immatriculation du véhicule: Signature:	3. Transporteur (nom, adresse): Type de transport: ⁵⁾ Date de livraison: Immatriculation du véhicule: Signature:	Centre logistique (nom, adresse): Date de livraison: Date du réacheminement:
Autres transporteurs ou autres centres logistiques? (Joindre une liste comprenant les indications les concernant, ainsi que leur signature)		oui <input type="checkbox"/>

Liste des procédés d'élimination

PARTIE A: PROCÉDÉS D'ÉLIMINATION NON CONSIDÉRÉS COMME UNE VALORISATION

- D1 Dépôt sur ou dans le sol (par exemple mise en décharge, etc.)
- D2 Traitement en milieu terrestre (par exemple biodégradation de déchets liquides ou de boues dans les sols, etc.)
- D5 Mise en décharge spécialement aménagée (par exemple placement dans des alvéoles étanches séparées, recouvertes et isolées les unes des autres et de l'environnement, etc.)
- D8 Traitement biologique non spécifié ailleurs dans cette liste, aboutissant à des composés ou à des mélanges qui sont éliminés selon l'un des procédés énumérés dans la partie A
- D9 Traitement physico-chimique non spécifié ailleurs dans cette liste, aboutissant à des composés ou à des mélanges qui sont éliminés selon l'un des procédés énumérés dans la partie A (par exemple évaporation, séchage, calcination, etc.)
- D10¹⁾ Incinération à terre
 - D101 Incinération dans une usine d'incinération des ordures ménagères (UIOM)
 - D102 Incinération dans une installation d'incinération des déchets spéciaux
 - D103 Incinération dans une chaufferie industrielle
 - D104 Incinération dans une cimenterie
- D12 Stockage permanent (par exemple placement de conteneurs dans une mine, etc.)
- D13²⁾ Mélange ou regroupement préalablement à l'un des procédés de la partie A
- D14²⁾ Reconditionnement préalablement à l'un des procédés de la partie A
- D15²⁾ Stockage préalablement à l'un des procédés de la partie A
 - D151 Stockage intermédiaire, puis réacheminement des déchets en vue de les soumettre à l'un des procédés figurant dans la partie A (les récipients ne sont pas vidés)
 - D152 Regroupement, stockage intermédiaire, puis réacheminement des déchets en vue de les soumettre à l'un des procédés figurant dans la partie A (pas de traitement, les récipients vides sont éliminés séparément)
 - D153 Tri, regroupement, traitement, stockage intermédiaire, puis réacheminement des déchets en vue de les soumettre à l'un des procédés figurant dans la partie A (les déchets subissent des changements; par exemple, certains composants sont écartés ou la composition des déchets est modifiée)
- D160³⁾ Traitement par une installation mobile

PARTIE B: PROCÉDÉS D'ÉLIMINATION CONSIDÉRÉS COMME UNE VALORISATION

- R1⁴⁾ Utilisation comme combustible (autrement qu'en incinération directe) ou autre moyen de produire de l'énergie
 - R101 Valorisation dans une usine d'incinération des ordures ménagères (UIOM)
 - R103 Valorisation dans une chaufferie industrielle
 - R104 Valorisation dans une cimenterie
- R2 Récupération ou régénération des solvants
- R3 Valorisation ou récupération de substances organiques qui ne sont pas utilisées comme solvants
- R4 Valorisation ou récupération des métaux et des composés métalliques
- R5 Valorisation ou récupération d'autres matières inorganiques
- R6 Régénération des acides ou des bases
- R7 Récupération des produits servant à capter les polluants
- R8 Récupération des produits provenant des catalyseurs
- R9 Régénération ou autres réemplois des huiles usagées
- R10 Épandage sur le sol au profit de l'agriculture ou de l'écologie
- R11 Utilisation de matériaux résiduels obtenus à partir de l'une des opérations numérotées de R1 à R10
- R12⁵⁾ Échange de déchets en vue de les soumettre à l'un des procédés numérotés R1 à R11
- R13⁶⁾ Mise en réserve de matériaux en vue de les soumettre à l'un des procédés figurant dans la partie B
 - R151 Stockage intermédiaire, puis réacheminement des déchets en vue de les soumettre à l'un des procédés figurant dans la partie B (les récipients ne sont pas vidés)
 - R152 Regroupement, stockage intermédiaire, puis réacheminement des déchets en vue de les soumettre à l'un des procédés figurant dans la partie B (pas de traitement, les récipients sont vidés)
 - R153 Tri, regroupement, traitement, stockage intermédiaire, puis réacheminement des déchets en vue de les soumettre à l'un des procédés figurant dans la partie B (les déchets subissent des changements; par exemple, certains composants sont écartés ou la composition des déchets est modifiée)
- R160³⁾ Traitement par une installation mobile (valorisation)

1) À ne remplir que si l'on n'utilise pas le document de bord prévu par les prescriptions sur les marchandises dangereuses

2) Indication supplémentaire en litres, si les prescriptions sur les marchandises dangereuses l'exigent

3) Utilisation restreinte selon l'annexe 1, ch. 2.1, let. b, OMoD

4) Désignation des colis selon les prescriptions sur les marchandises dangereuses

5) 1 Route 2 Rail 3 Voie navigable 4 Transport combiné

À conserver par l'entreprise d'élimination

¹⁾ S'agissant du trafic intérieur, on remplacera pour des raisons statistiques le code D10 par le code D101, D102, D103 ou D104 qui convient.

²⁾ S'agissant du trafic intérieur, on remplacera ce code par le code D151, D152 ou D153 qui convient.

³⁾ Ce code est réservé au trafic intérieur.

⁴⁾ S'agissant du trafic intérieur, on remplacera pour des raisons statistiques le code R1 par le code R101, R103 ou R104 qui convient.

⁵⁾ S'agissant du trafic intérieur, on remplacera ce code par le code R152 ou R153 qui convient.

⁶⁾ S'agissant du trafic intérieur, on remplacera ce code par le code R151, R152 ou R153 qui convient.

SWISS WASTE LEGISLATION

Ordinance on the movements of waste

- Obligation to establish a waste tracking document for its movement, exceptions for:
 - quantities < 50kg
 - return to seller (products unsealed)
- Labelling for the movement :
 - mention "special waste"
 - waste code
 - tracking document number
- Permit obligation for reception
- Permit delivery by cantons



SWISS WASTE LEGISLATION

Ordinance on the movements of waste

- Obligation of control (quality, authorization, description...) by the elimination company
- Obligation of an annual declaration in a specific database (veva-online / FOEN) by the elimination company



SWISS WASTE LEGISLATION

Ordinance on the Remediation of Polluted Sites



SWISS WASTE LEGISLATION

Ordinance on the Remediation of Polluted Sites

This ordinance aims at:

- Ensure that polluted sites are remediated if they cause harmful effects or nuisance or if there is a real danger that such effects may arise
- Regulates the procedure for treating polluted sites:
 - Recording in a register
 - Assessment of the need for monitoring and remediation
 - Assessment of the objectives and urgency of remediation
 - Specification of the measures for investigations, monitoring and remediation



SWISS WASTE LEGISLATION

Ordinance on the Remediation of Polluted Sites

Definition:

- Polluted sites
- Sites in need of remediation: sites that cause harmful effects or nuisances (air, soil, ground water, surface water)
- Contaminated sites (= polluted site in need of remediation)



SWISS WASTE LEGISLATION

Ordinance on the Remediation of Polluted Sites

Register of polluted sites:

- Authorities (cantons) are in charge of it
- Holders of the sites or from third parties shall give required informations



SWISS WASTE LEGISLATION

Ordinance on the Remediation of Polluted Sites

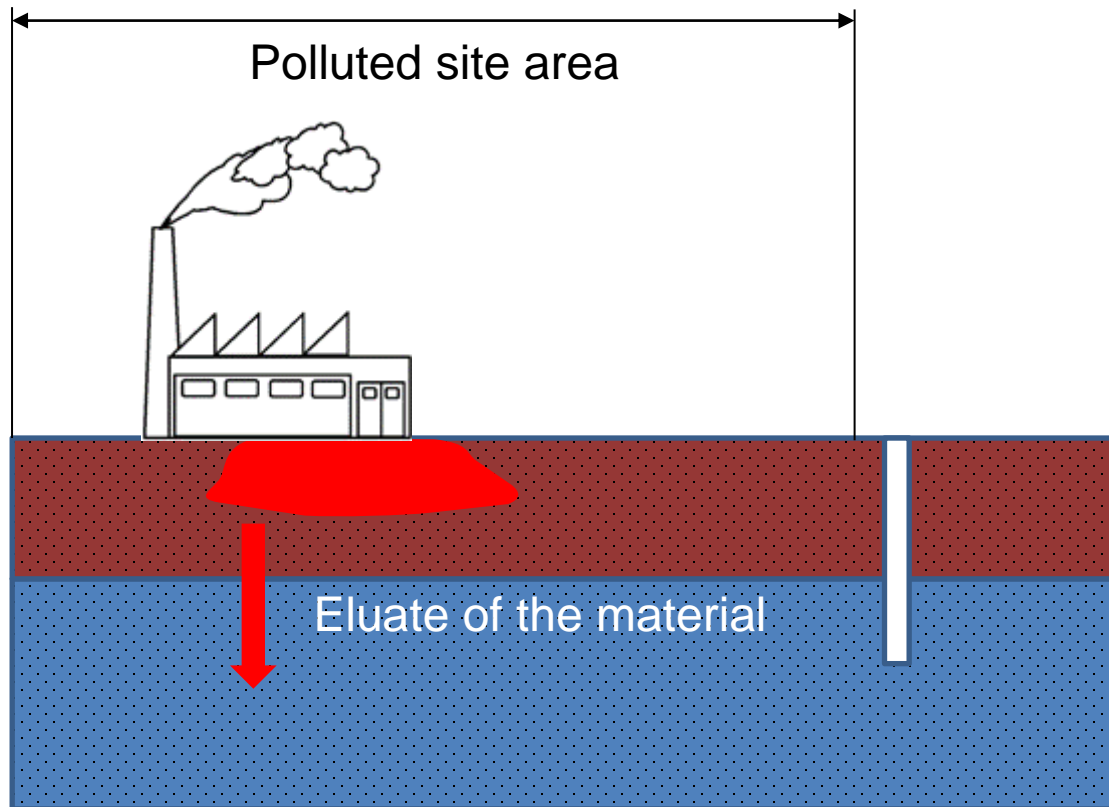
GROUNDWATER

- Assessment of the need for monitoring :
 - a. Eluate of the material at the site $> 0,1 \mu\text{g/l}$



SWISS WASTE LEGISLATION

Ordinance on the Remediation of Polluted Sites



SWISS WASTE LEGISLATION

Ordinance on the Remediation of Polluted Sites

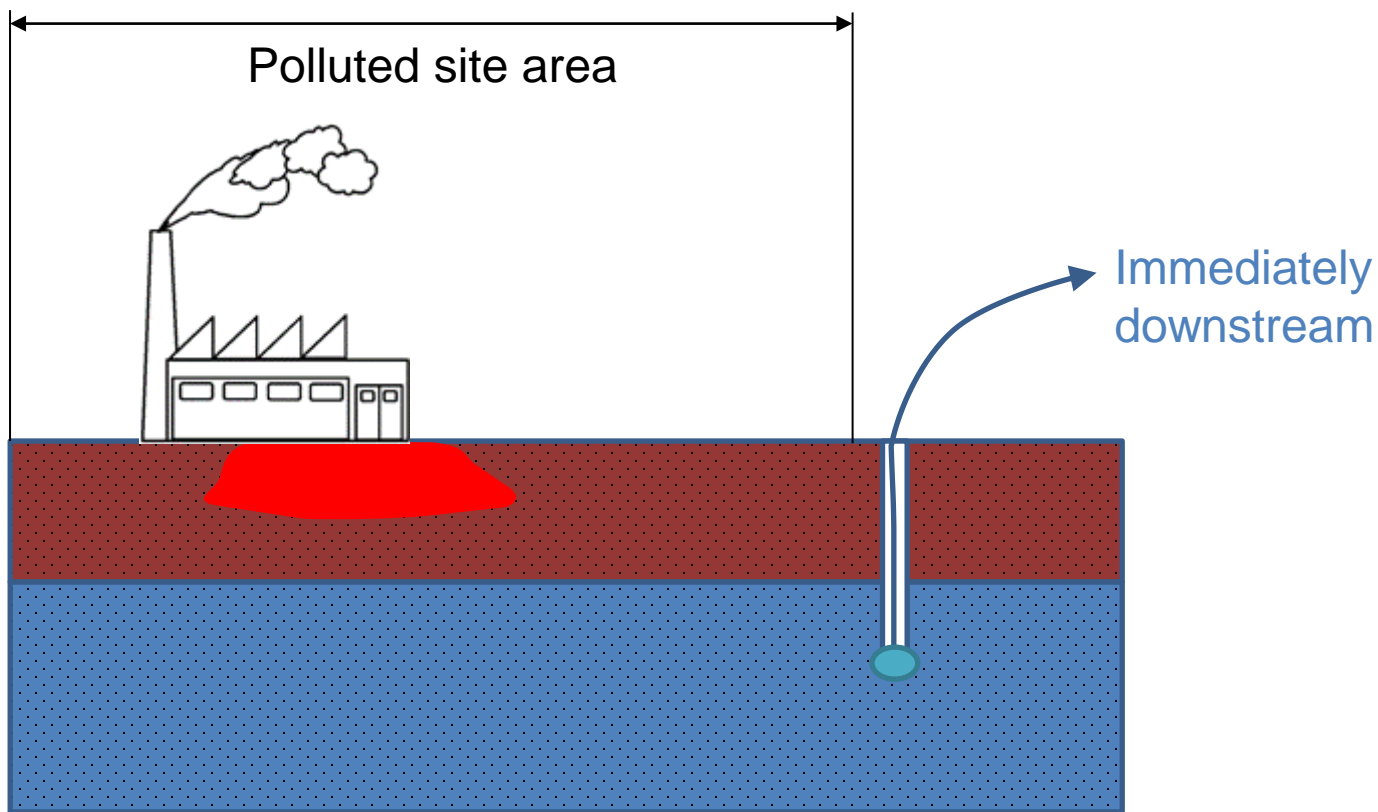
GROUNDWATER

- Assessment of the need for monitoring :
 - a. Eluate of the material at the site **> 0,1 µg/l**
 - b. Concentration immediately downstream the site **> 0,01 µg/l over** a water protection area



SWISS WASTE LEGISLATION

Ordinance on the Remediation of Polluted Sites



SWISS WASTE LEGISLATION

Ordinance on the Remediation of Polluted Sites

GROUNDWATER

- Assessment of the need for monitoring :
 - a. Eluate of the material at the site **> 0,1 µg/l**
 - b. Concentration immediately downstream the site **> 0,01 µg/l over** a water protection area
 - c. Concentration immediately downstream the site **> 0,04 µg/l outside** a water protection area



SWISS WASTE LEGISLATION

Ordinance on the Remediation of Polluted Sites

GROUNDWATER

- Assessment of the need for remediation :
 - a. Concentration $> 0,1 \mu\text{g/l}$ originating from the site detected in groundwater catchments of public interest



SWISS WASTE LEGISLATION

Ordinance on the Remediation of Polluted Sites

GROUNDWATER

- Assessment of the need for remediation :
 - b. Concentration immediately downstream the site **> 0,05 µg/l over** a water protection area
 - c. Concentration immediately downstream the site **> 0,2 µg/l outside** a water protection area



SWISS WASTE LEGISLATION

Ordinance on the Remediation of Polluted Sites

SURFACE WATER



SWISS WASTE LEGISLATION

Ordinance on the Remediation of Polluted Sites

SURFACE WATER

- Assessment of the need for monitoring :
 - a. Concentration of PCB exceeds **0.1 µg/l** in the eluante of the material which is susceptible of affecting surface waters



SWISS WASTE LEGISLATION

Ordinance on the Remediation of Polluted Sites

SURFACE WATER

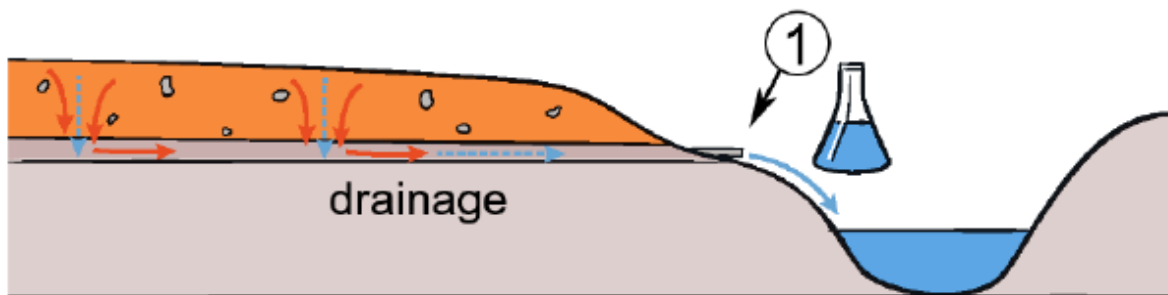
- Assessment of the need for monitoring :
 - a. Concentration of PCB exceeds **0.1 µg/l** in the eluante of the material which is susceptible of affecting surface waters
 - b. Concentration of PCB originating from the site exceeds **0.1 µg/l** in water that flows into surface waters



SWISS WASTE LEGISLATION

Ordinance on the Remediation of Polluted Sites

SURFACE WATER



SWISS WASTE LEGISLATION

Ordinance on the Remediation of Polluted Sites

SURFACE WATER

- Assessment of the need for remediation :
 - a. Concentration of PCB originating from the site exceeds **1 µg/l** in water that flows into surface waters



SWISS WASTE LEGISLATION

Ordinance on the Remediation of Polluted Sites

AIR POLLUTION

- Not concerned



SWISS WASTE LEGISLATION

Ordinance on the Remediation of Polluted Sites

POLLUTION OF THE SOIL

Remediation obligation if the concentration of PCB exceeds :

- Soil used for agricultural or horticultural : **3mg/kg**
- Soil in private gardens and allotements, children's playgrounds and other facility where childrened play regularly: **1 mg/kg**

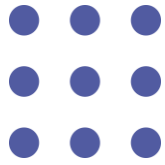


SWISS WASTE LEGISLATION

Cantonal legislation

- No specific provisions in cantonal legislation: the federal legislation applies.
- (The *waste management plan* concerns mainly municipal waste and the cities are in charge of its application)





PCB AS WASTE

PCB AS WASTE

Two main categories of waste:

- Minerals waste
- Built environment waste

Both case => construction site waste

PCB AS WASTE

A tool : the construction site waste guide



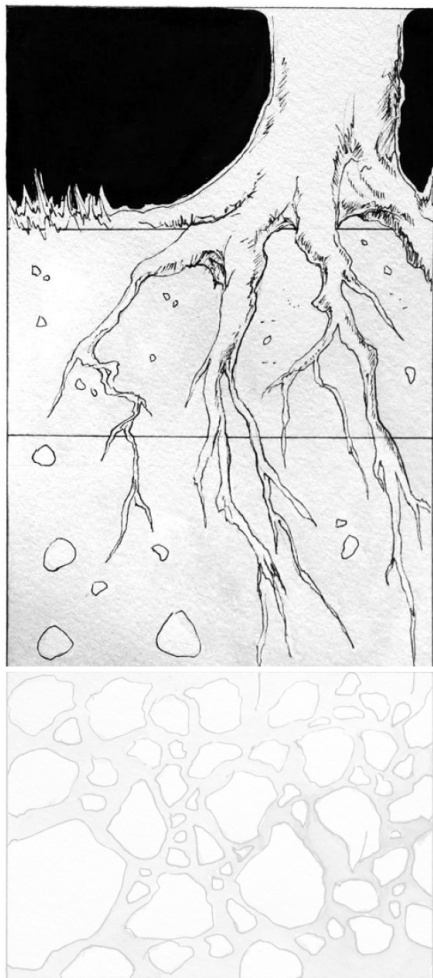
PCB AS WASTE

A tool : the construction site waste guide



PCB AS WASTE

Limit values for topsoils



Horizon A

Couche supérieure du sol
Matériaux terreux

Horizon B

Couche sous-jacente du sol
(altérée et meuble)
Matériaux terreux

Horizon C

Sous-sol
Matériaux d'excavation

PCB AS WASTE

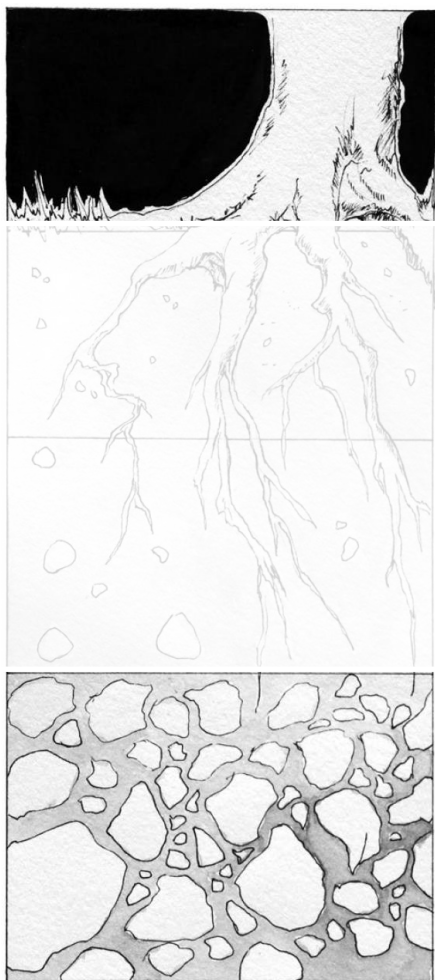
Limit values for topsoils (Soils ordinance)

Concentration (dry matter)	Consequence
< 0.1 mg/kg	No restriction (no risk through ingestion)
< 0.2 mg/kg	No restriction for food and forage crops
> 1 mg/kg	Remediation threshold for playgrounds and family and private gardens
> 3 mg/kg	Remediation threshold for agriculture and horticulture

⇒ Disposal pathways are determined according to the waste ordinance

PCB AS WASTE

Limit values for subsoils



Horizon A
Couche supérieure du sol
Matériaux terreux

Horizon B
Couche sous-jacente du sol
(altérée et meuble)
Matériaux terreux

Horizon C
Sous-sol
Matériaux d'excavation



PCB AS WASTE

Limit values for mineral waste (Waste ordinance)

Category	Concentration (dry matter)	Landfill category
Unpolluted	< 0.1 mg/kg	Recycling / Type A
Slightly polluted	< 0.5 mg/kg	Recycling* / Type B
Moderately polluted	< 1 mg/kg	Type B
Heavily Polluted	< 10 mg/kg	Type E
Contaminated	> 10 mg/kg	No landfilling (special waste)

* only on the site materials come from

PCB AS WASTE

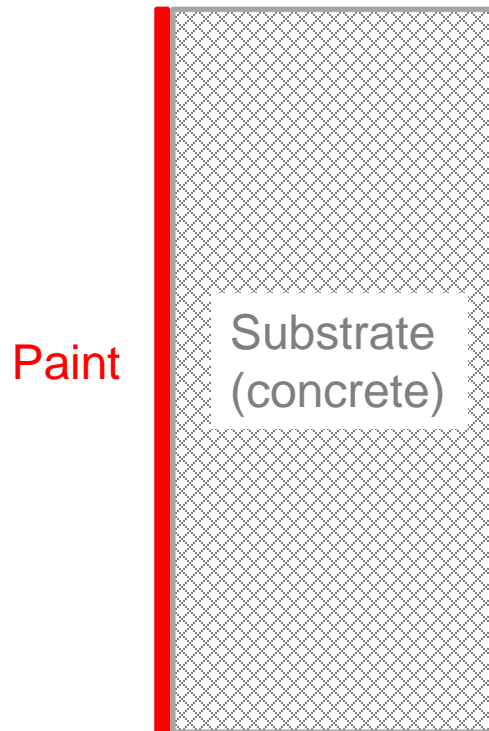
Paint on mineral substrate



PCB AS WASTE

Paint on mineral substrate

Case 1: PCB < 100 mg/kg

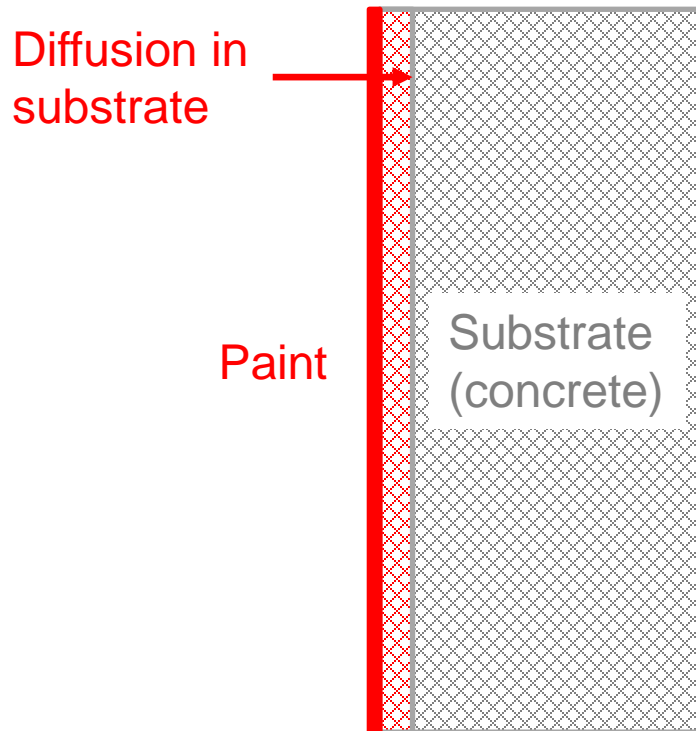


- No removal of the paint
- Determination of the concentration on the entire material (paint + substrate)

PCB AS WASTE

Paint on mineral substrate

Case 2: PCB > 100 mg/kg



Polluted substrate

- Removal of the paint + polluted substrate (concrete recycling obligation vs landfilling)

PCB AS WASTE

Paint on mineral substrate

Disposal pathways based on concentrations for the mineral substrate

Total concentration	Treatment
< 0.1 mg/kg	Recycling the aggregate (in bound or unbound forms)
< 0.5 mg/kg	Recycling the aggregate in bound forms only
< 1 mg/kg	Landfilling (type B)
< 10 mg/kg	Landfilling (type E)
> 10 mg/kg	No landfilling (special waste)

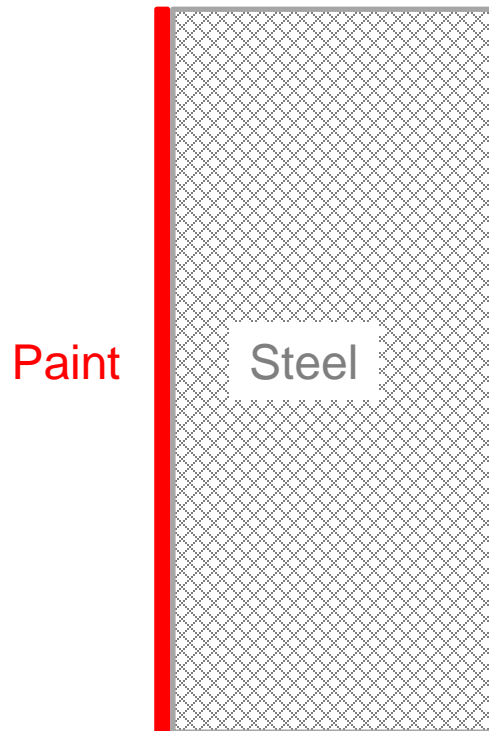
PCB AS WASTE

Paint on metals

PCB AS WASTE

Paint on metals

Paint + steel < 2'000 mg/kg

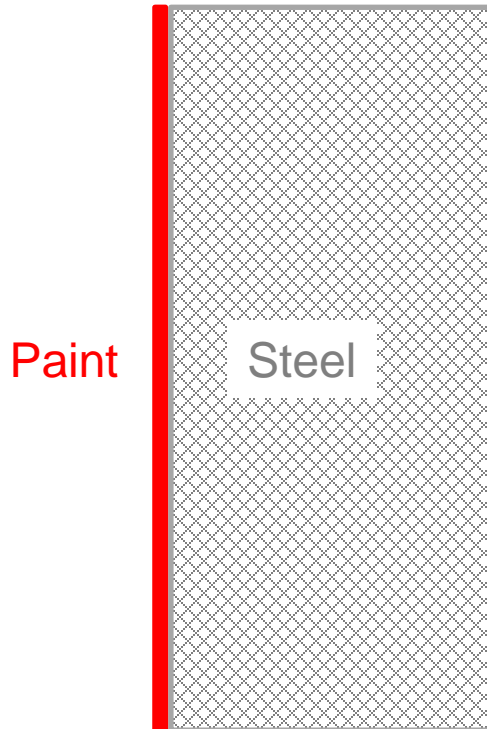


- No removal of the paint
- Elimination in a swiss foundry only

PCB AS WASTE

Paint on metals

Paint + steel > 2'000 mg/kg



- Separated elimination of the paint (special waste) and the steel (recycling in a foundry or reuse)

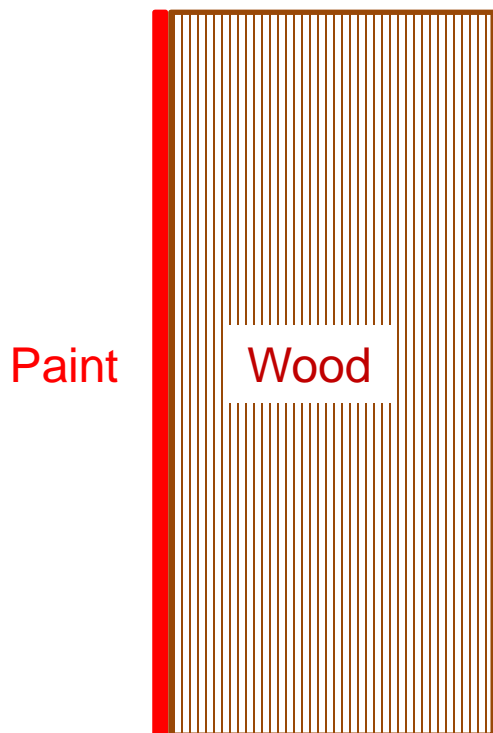
PCB AS WASTE

Paint on wood

PCB AS WASTE

Paint on wood

Paint + wood



Total concentration	Treatment
< 3 mg/kg	Recycling as composite wood
< 5 mg/kg	Thermal recycling in waste wood furnace
< 10 000 mg/kg	Facility for the incineration of waste
> 10 000 mg/kg	Facility for the incineration of special waste

PCB AS WASTE

Transformers / Capacitors

PCB AS WASTE

Transformers / Capacitors

- PCB < 50 mg/kg => Ordinary waste (recycling as electronical waste)
- PCB > 50 mg/kg => Special waste (treatment by an authorized company or incineration)
- Contaminated oils must be treated in a special waste incinerator

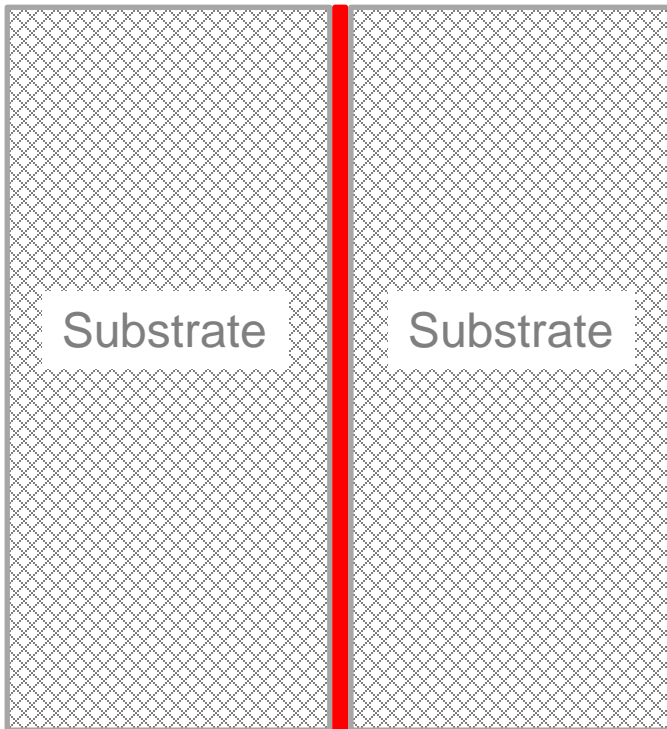
PCB AS WASTE

Caulks

PCB AS WASTE

Caulks

Case 1: PCB < 1'000 mg/kg



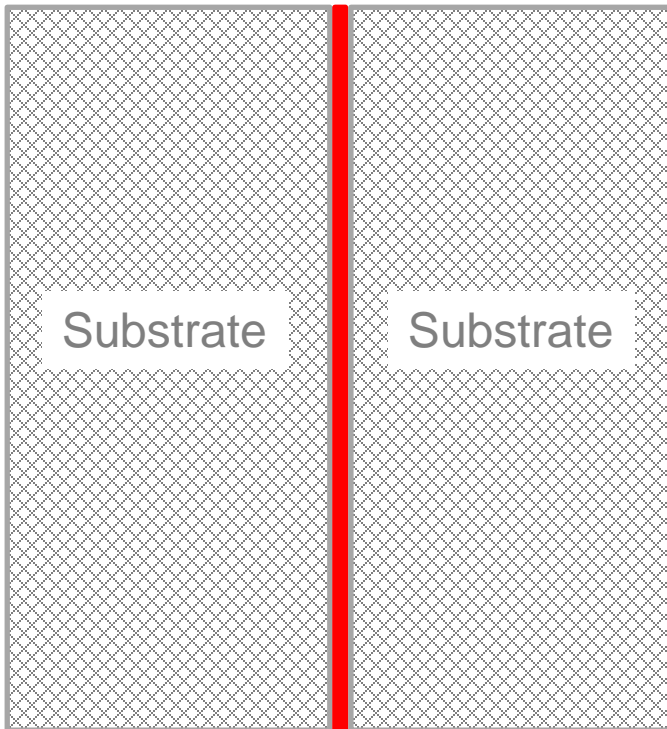
Caulks

- No removal of the caulks
- No specific condition for the mineral substrate recycling

PCB AS WASTE

Caulks

Case 1: PCB > 1'000 mg/kg



Caulks

- Removal of the caulk and the polluted substrate in order to recycle the mineral substrate

PCB AS WASTE

Caulks

Total concentration	Treatment
< 10 000 mg/kg	Facility for the incineration of waste (but as a special waste)
> 10 000 mg/kg	Facility for the incineration of special waste

For reference: PCB > 50 mg/kg => Special waste (management in accordance with the appropriate requirements)

THANK YOU FOR YOUR ATTENTION