

European Commission, Brussels



**THE ORGANISATION OF AWARENESS-RAISING EVENTS ON THE APPLICATION OF
COMMUNITY LEGISLATION ON SHIPMENTS OF WASTE, ON LANDFILLS;
ON WASTE MANAGEMENT PLANS AND ON WASTE PREVENTION PROGRAMMES**

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MINUTES

FRANCE – LANDFILL OF WASTE

10 July 2009

BiPRO

Beratungsgesellschaft für integrierte Problemlösungen

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1 Outcome of events

1.1 Workshop on landfill of waste in France

Dijon	11 and 12 June 2009	National Cooperation partner: Ministry of Ecology, Energy, Sustainable Development and of the Sea (MEEDDAT) Venue: DRIRE Bourgogne, Dijon Participants: 17 Agenda: 9 presentations (including EC and BiPRO)
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Table 1-1: Overview on workshop on landfill of waste in France

The information exchange and awareness raising event on landfill of waste in France took place the 11 and 12 June in Dijon. The event was organised with support of the MEEDDAT (Ministry of Ecology, Energy, Sustainable Development and of the Sea) and the DRIRE (Decentralised regional Authority under the MEEDDAT).

The 17 participants comprised representatives of the MEEDDAT and national authorities such as the ADEME (French Environment and Energy Management Agency), the BRGM (Geological and Mineral Research Centre), the INERIS (National Institute for Industrial Environment and Risks) and CEMAGREF (French Institute of Agricultural and Environmental Engineering Research) as well as regional and local authorities (see Table 2-2 participation list).

The workshop was held in French, with partial consecutive translation from English for presentation and discussion statements. In total 8 presentations were held.

Note: The workshop comprised an informative excursion to the Landfill site “SITA FD” in Drambon around 40 km from Dijon.

1.1.1 *Summaries of presentations held in France*

Apart from the presentations from BiPRO and the Commission Services, the following presentations were held during the workshop in France:

(1) The national regulations - The landfill sites («La réglementation nationale / Le parc des installations de stockage de déchets») (MEEDAT)

The presentation provided a general overview on the national key policies and priorities for waste management in France. It addressed the steps taken to implement Directive 1999/31/EC and related EC documents in France. The strategic perspective was outlined, indicating the results of a political discussion in round-table debates (“Grenelle Environnement”). In addition it provided information on waste generation and treatment as well as on numbers of landfills

(2) Permit procedures («Les procédures d'autorisation»/«Exemple de procédure d'un dossier autorisé») (DRIRE Bourgogne / Département Côte d'Or)

In the presentation, procedures of permitting landfills and current experiences were outlined by two representatives of authorities at regional and at departmental level. The two presentations gave insight into recent practice of permitting procedures for landfills for hazardous and for non-hazardous waste respectively, general difficulties encountered as well as some information on legal background and control measures imposed.

(3) Some feedback on geological barriers and Waste Acceptance Criteria («Retour d'expérience sur la barrière passive et les critères d'admission») (BRGM)

The presentation focussed on the requirements for bottom sealing layers in the European Landfill Directive and the associated difficulties and short-comings as a basis to explain and justify the stricter approach on landfill barriers chosen in French legislation. The French concept of implementing the Landfill Directive requirement was outlined for cases where natural geological conditions are not favorable. Finally the fact that naturally occurring inert materials (e.g. soils) do not comply with certain EU leaching limits for inert waste landfills was shortly stressed as causing major practical problems. A slight revision of the requirements was proposed as potential solution.

(4) Managing the risks arising from the treatment/landfill of non-hazardous waste («Maîtrise des risques en relation avec le traitement/stockage des déchets non dangereux») (INERIS)

The presentation concentrated on best management practice and risk management for non-hazardous wastes. This comprised a short presentation of the two principal approaches (MBT and classical disposal including bioreactor) as well as material recovery options (organic fraction, plastics, etc.) and energy recovery (biogas). The presentation then provided details on leachate and gaz management including temporal aspects (trends in concentrations and quantities) to take into account, latest results as concerns adaptation of the superficial cover layer to improve passive and active collection of diffuse low level gas emissions and open aspects for risk reduction to tackle (limited knowledge on composition of solid fraction especially as concerns POPs and new POPs). The presentation concluded that there is a need to differentiate management for rural areas (priority on material recovery) and agglomerations (priority on energy recovery) and that the measures for management of the residual emissions have to take into account the progressive differentiation of the landfilled residual waste.

(5) Limit released biogas in the atmosphere («Limiter les émissions de biogaz à l'atmosphère») (ADEME)

The focus of the presentation was on the two different approaches and possibilities to limit biogas emissions to the atmosphere as well as their limitations. After a short demonstration of the targets and priorities (odour management, CH₄ emission reduction, energy recovery), the performance and technologies to request and the limitations of a "bioreactor" and up-stream separation and pre-treatment measures were presented. As a conclusion the running of a bioreactor is a promising

method but requires material and human resources and depends on many parameters (climate, configuration site, etc.). As a critical point, notably the prediction of long term emissions was pointed out. The presentation concluded with general recommendations for landfill management and links to ADEME guidance documents and publications in this respect.

(6) Join efforts for global solutions for recovery, treatment and disposal of waste («Fédérer pour des solutions globales de valorisation, traitement et stockage des déchets») (SITA FD Landfill Site)

The presentation introduced the waste landfill site for hazardous and for non-hazardous waste located in Drambon. Details on the economic background of the managing company as well as information on technical aspects (capacity, infrastructure, applied procedures, management of the landfill) were provided.

Site visit to SITA FD Landfill Site

The landfill site “Ecopole des Moulins” run by the Company SITA FD is a landfill for hazardous and non-hazardous waste located in Drambon, 40 km east of Dijon. The operator SITA in total manages 70 landfills for non-hazardous waste, 7 landfills for hazardous waste and 38 waste incinerators in France. The Drambon landfill was opened in 1978. It covers an area of 100 ha. 8 ha are already re-cultivated. It is certified following ISO 9001 and ISO 14001. The staff number is 18. The Drambon landfill site disposes of five main sectors with the following respective maximum annual capacity:

- Landfill for hazardous waste (class 1 according to French legislation) – 80,000 tons
- Landfill for non-hazardous waste (class 2 according to French legislation) – 72,000 tons
- A composting facility – 20,000 tons
- A stabilisation unit – 50,000 tons
- A polluted soil treatment facility – 30,000 tons



Figure 1-1: Drawing of Drambon landfill site (source: presentation SITA FD)

The landfill is equipped with a double (active and passive) bottom sealing layer. The complete traceability of every accepted waste is ensured by electronic data management in every step of its treatment cycle. The acceptance procedures follow the requirements of the WAC decision with some additional examinations, such as the routine testing for radioactivity. Hazardous waste is principally subject to chemical on-site analysis (quick-tests for metals and organic compounds). In case analysis shows that there is no appropriate treatment technology available at the Drambon landfill site, the waste is refused. The accepted hazardous wastes besides contaminated soils mainly arise from industrial operations.

Gate fees are up to 200 €/t of hazardous and 100 €/t of non-hazardous waste (average costs for non-hazardous waste in France is around 60 €/t).

Hazardous waste can either be landfilled directly (compliant with leaching limits) or undergoes solidification and chemical stabilization

Non-hazardous waste is managed in cells run as bioreactor.

Contaminated soils are treated in a specialized installation (Biocentre) for biological decontamination focusing on degradation of hydrocarbons.

The hazardous waste sector comprises specific cells for stabilized waste, direct disposal and asbestos waste.

Leachate from the hazardous waste cells is used for stabilisation. Leachate from the non-hazardous waste cells is re-injected to run the bioreactor. .

Landfill gas from the non-hazardous waste cells is collected by a system of ponds and a collection pipe system with continuous suction. Currently the gas is flared, but can be used for energy recovery after being purified.

Regular monitoring is carried out. The automated system monitors a comprehensive range of site data on interactive trends for display online and storage to computer. The manager has access to on-site laboratory facilities and can call upon the services of external monitoring contractors.

Box 1-1: Site visit to Drambon SITA FD landfill

The presentations from France, including the standard presentations from the EC and BiPRO are available for download at: www.bipro.de/waste-events/landfill/events09/fr.htm

1.1.2 *Legal background and national enforcement structure in France*

France has implemented the provisions of the Landfill Directive within a number of Acts and Decrees. The legal framework for landfills is laid down in the central legal environmental document *Code d'Environnement, Titre 5*, which lays down that landfill of all classes are subject to authorization and control. The following landfill classes are recognised by French legislation:

- „classe 1“ = landfills for hazardous waste
- „classe 2“ = non hazardous waste
- “classe 3” = landfills for inert waste (two types are distinguished depending on whether the inert waste is produced within an IPPC facility or not)

For each class of landfills, specific legislation is in place:

- Landfills for hazardous waste are addressed in the documents
 - Arrêté du 30 décembre 2002 relatif au stockage de déchets dangereux
 - Circulaire du 10 juin 2003 relative aux installations de stockage de déchets dangereux
- Regarding landfills for non hazardous waste, the relevant rules are laid down in
 - Arrêté du 9 septembre 1997 relatif aux décharges existantes et aux nouvelles

installations de stockage de déchets non dangereux as amended

- Circulaire du 6 juin 2006 relative aux installations de stockage de déchets non dangereux.
- Regarding landfills for inert waste, current regulation is to be found in
 - Arrêté du 15 mars 2006 fixant la liste des déchets inertes admissibles dans des installations de stockage de déchets inertes et les conditions d'exploitation de ces installations (= inert waste not produced in IPPC facilities)
 - Arrêté du 31 décembre 2004 relatif aux installations de stockage de déchets industriels inertes provenant d'installations classées (= inert waste from IPPC facilities)
 - Circulaire du 20 décembre 2006 relative aux installations de stockage de déchets inertes

The main political and strategic body in the field of waste management is the MEEDAT. Less than 15 permanent staff experts are concerned with the implementation of EU waste legislation in the Ministry.

Expert advice and scientific support in different waste related issues is provided by diverse State agencies, notably by ADEME (Environment and Energy Management Agency) which is an industrial and commercial public agency and for Higher Education and Research, under the joint supervision of the MEEDAT and which has as general mission to encourage, coordinate and manage operations with the aim of protecting the environment. However, in the field of waste, ADEME focuses rather on waste prevention projects than on projects in the area of landfilling.

As regards planning and enforcement at regional and at local level, the actors in this field are municipalities, *Départements* and *Régions*. The *Régions* are the top regional level being composed of several *Départements*. The basic concept is that

- Regions are responsible for planning in the area of hazardous waste; further, they make suggestions and control decisions by the *Départements*, e.g. permit issues
- *Départements* are responsible for planning in the area of non-hazardous waste excluding municipal waste; they issue permits for waste treatment facilities (an IPPC permit is necessary irrespective of the size of the waste treatment site);
- Municipalities (which number up to 36,000 in France) are responsible for planning and management of municipal waste. On a contractual basis, two or several municipalities are collaborating to enhance efficiency

Whereas permits for landfills for non-hazardous and for inert waste are issued by the prefects (head of departments), the planning for hazardous waste management is done at regional level. The applicant to a permit has to present an impact assessment as part of the application. On the basis of this information and possible additional expertise a Joint Committee (CODERST) under the

presidency of the prefect DRIRE decides on the application.

1.1.3 Facts and figures related to landfilling of waste in France

Information on waste management infrastructure and landfills

The total amount of waste produced in France was around 850 million tons in 2007. The dominant fractions by volume are agricultural waste (43 %) and C&D waste (40%) (see Figure 1-2).

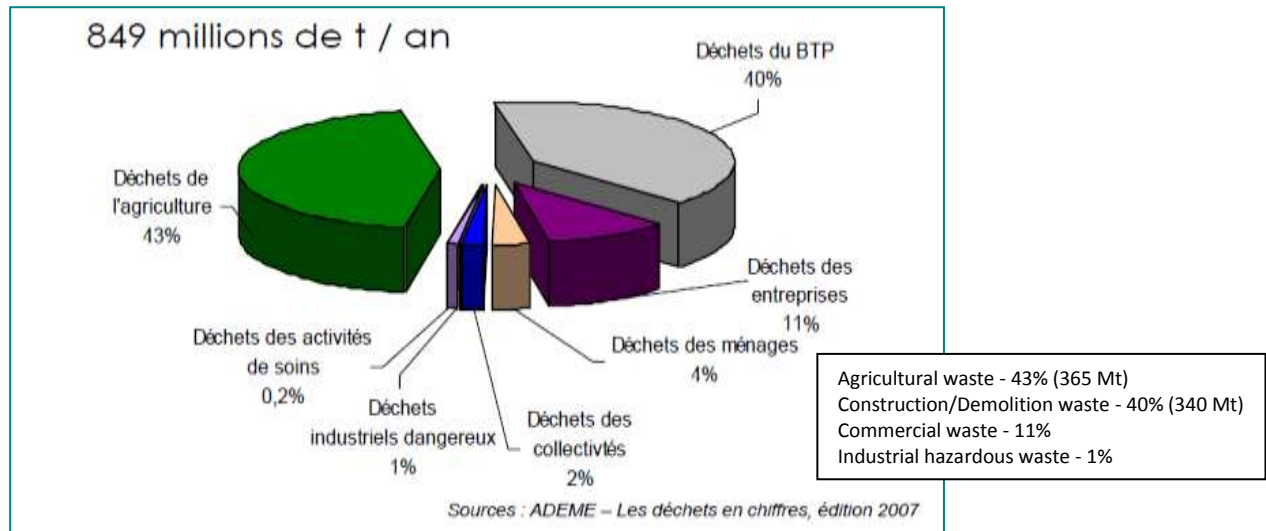


Figure 1-2: Total waste generation in France 2007 (source: presentation Eric Gaucher)

Hazardous waste from industries represents around 1 % of the total waste quantity. Its major fractions are creosote-contaminated wood waste (about 2.3 Mt) and chemical wastes without waste oils (about 2 Mt)) (see Figure 1-3).

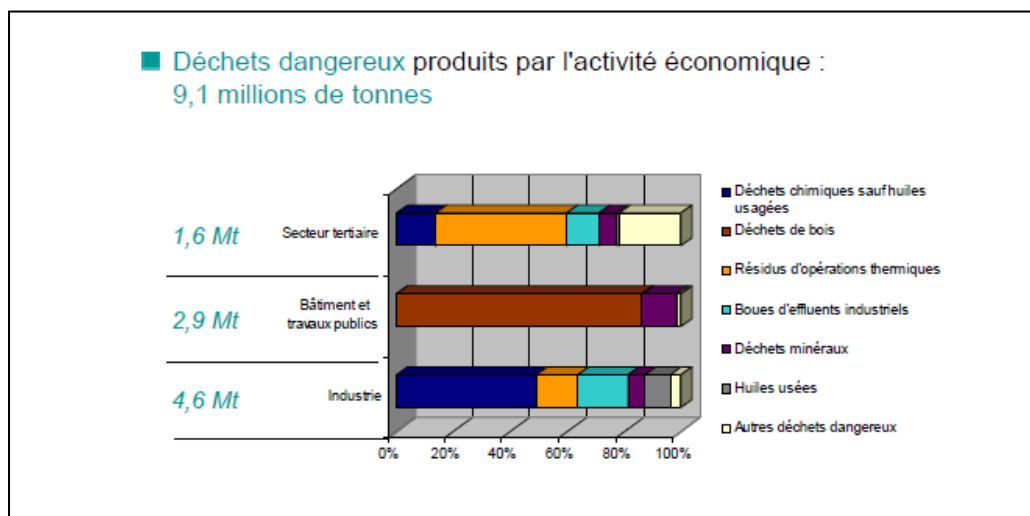


Figure 1-3: Industrial hazardous waste in France (source: Presentation SITA FD)

The following annual waste quantities were accepted at French landfills in 2006/2007:

- 21.5 million tons of inert waste (the low quantity (<10% of the amount generated) is explained by the high rate of recycling/recovery)
- 22.9 million tons of non-hazardous waste
- 1.7 million tons of hazardous waste

France has a number of:

- 628 landfills for inert waste (2008)
- 303 landfills for non-hazardous waste (2006)
- 14 landfills for hazardous waste (2008)

Following the figures above and a survey by EEA in 2007, around 5 % of the total waste amount and around 40 % of municipal solid waste is currently landfilled, a figure which has already been reduced significantly throughout the last years (over 50 % still in 2004).

An inventory of old landfills has been drawn up at national level. Existing landfills are regularly controlled at least once a year. Taking in mind the transition period for adaptation of the requirements of the Landfill Directive, in 2008 a national action was conducted on landfills for non-hazardous waste. 30 out of the 249 controlled sites were identified as being suspicious; these will be object to further investigation.

The unanimous opinion stated during the workshop was that France is still too much relying on landfilling of municipal solid waste. This is partly due to the necessary modernisation of the waste treatment facilities' infrastructure, additionally, it was estimated that the public awareness, e.g. for separate collection, is yet to be increased.

Nationwide separate collection of MSW is in place for the fractions glass and dry packaging. The level of further separation is diverse in France. In some municipalities, additional waste streams are to be separated; sometimes, also private companies pre-select mixed MSW having a contract with the respective municipalities.

Information about the strategic approach in "Grenelle Environnement"

Strategic aims for re-shaping of the French waste management infrastructure were debated within the "*Grenelle Environnement*", a stakeholder round table project on environmental issues, and finally laid down in a strategic perspective with a subsequent legislative project (see Figure 1-4).

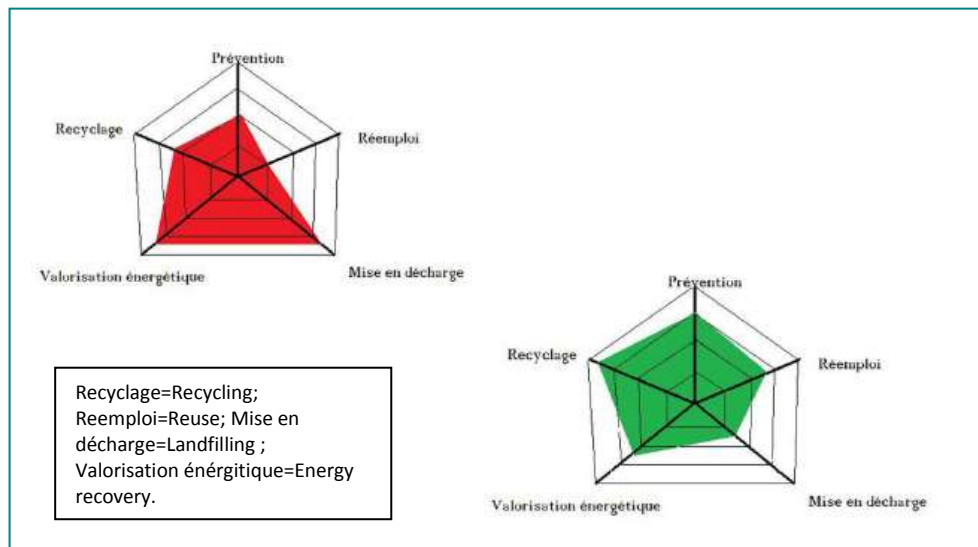


Figure 1-4: Re-shaping the strategic approach as regards waste management (source: presentation Eric Gaucher)

In detail, the following targets for future waste policy were outlined:

- Reduce the production of domestic and similar waste by 5 kg per capita and year during the five next years
- Increase recycling (including organic recovery) by means of implementing respective financial incentives
- Increasing recycling (including organic) to obtain a 35 % rate in 2012 and 45 % in 2015 of household wastes and similar wastes against 24 % in 2004
- Increase the recycling rate of package and packaging waste from domestic and commercial sources to 75 % by 2012
- Reduce the share of incineration or landfill at 15 % before 2012

In implementing the strategic aims of the “*Grenelle Environnement*”, a new tax on polluting activities has been introduced aiming at in a mid-term range making recycling of waste distinctively cheaper than incineration and landfilling.

The following elements of the tax are of interest:

- Tax on acceptance of wastes at incineration sites rising linearly from 7 €/t in 2009 to 14 € in 2013
- Tax on acceptance of non-hazardous wastes at underground storage sites rising linearly from 15 €/t in 2009 to 40 € in 2015

Waste fees for citizens paid per dust bin are introduced so far only as test run. The responsibility to lay this down is with the municipalities.

Information about specifications of landfill design - Barriers

In the Landfill Directive distinction between different classes of landfills relies largely on characteristics of the geological barrier, expressed in terms of minimum thickness and maximum hydraulic conductivity (K). For hazardous and non-hazardous waste, a primary constraint is the presence of a low-K mineral barrier ($K < 10^{-9}$ m/s). For situations where natural geological conditions are not favourable, the Directive provides for “an equivalent level of protection” and states that an artificial established geological barrier should not be less than 0.5 m thick.

The Directive does not specify what is meant by “equivalent” nor does it explicitly state that the 0.5 m-thick barrier should have $K < 10^{-9}$ m/s over its entire thickness.

The concept of “permeability” (time required for water to travel through the barrier) which is the theoretical background to this requirement was criticized as being too simplistic because:

- It would rather be the potential impact that would be important than the transfer.
- The effect of molecular diffusion on pollutant migration would be neglected.
- The fact would be denied that reducing barrier thickness increases risks associated with potential barrier material defects (compacted clay has defaults in forms of horizontal and vertical discontinuities, which can serve as path way; GCLs may display significant variations of bentonite mass per unit area, especially when sub-grade is inadequate; effects of chemical evolution (ion exchange) can change hydraulic continuity) .

Therefore a “Recommendation Guideline for evaluation of equivalence of a passive barrier system in landfills” (Guide de recommandation pour l'évaluation de l'équivalence en échantéité passive d'installations de stockage de déchets) has been developed and published by MEEDAT. The guideline contains a clear distinction between active and passive barriers in terms of function and materials to use as well as the additional obligation for non-hazardous waste landfills to install (or provide naturally) an attenuation layer of >5m below the low-K mineral barrier with a K factor of $< 10^{-6}$ m/s).

According to the French approach:

- Low aquifer vulnerability must be clearly demonstrated through adequate geological and hydrogeological investigations
- Reduced low-K barrier thickness accepted only if low vulnerability is demonstrated (safety limit: 0.5 m)
- Model calculations are of secondary importance (models do not adequately account for real-world heterogeneities or defaults)
- Alternative barriers (e.g. GCLs) can be used as reinforcement (not replacement) of compacted clay liners or treated soils, particularly when the attenuation layer does not quite comply

Information about waste acceptance criteria – Limit values for inert waste

It was stressed and discussed that inert waste landfill operators in France sometimes face difficulties with respect to the inert waste acceptance criteria as set in Decision 2003/33/EC. Some natural geological materials (e.g. sands, marls, schists) are sometimes found not to comply with certain parameters such as soluble salts, especially SO₄. This has important consequences, for instance for the management of excavated soils, although these soils are not to be regarded as dangerous at all and are naturally occurring in this composition. Therefore it was suggested as possible solution to use a local geochemical background (in terms of leachability rather than total content) for classification purpose.

Information about biogas management – The bioreactor

France has put a research and emphasis in the development of Two approaches are discussed to limit biogas emissions to the atmosphere. The concept of “bioreactor” (see Figure 1-5).

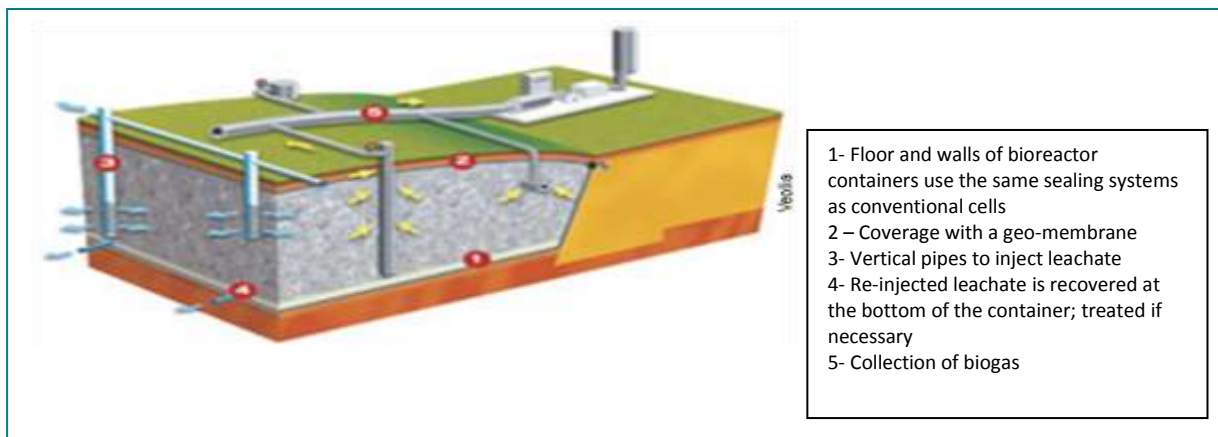


Figure 1-5: Drawing of a bioreactor (source: presentation Isabelle Hebe)

Running a bioreactor is a promising landfill management method but that it requires material and human resources and depends on many parameters (climate, configuration site, etc.). As a critical point, notably the prediction of long term emissions was pointed out. In France, 12 landfills are authorized to practice leachate re-circulation.

1.1.4 *Major problems and deficits identified in France*

- France has still a relatively high share of landfilling of MSW with considerable biodegradable fractions
- Landfills are generally not well accepted and have a significant potential of environmental and climate impacts
- Waste management infrastructure needs to be balanced between the regions, whilst landfills need to have a minimum capacity to be managed according to current requirements and BEP
- The waste department in the MEEDAT is rather understaffed

- Waste management infrastructure with sophisticated separation is not everywhere developed
- Public attitude towards waste separation has to be improved
- Waste fee system is in the responsibility of municipalities and does not always reflect the polluter-pays principle
- Public opposition and review of authorities' decisions by taking it to Courts was reported as a general phenomenon
- On a contractual basis, two or several municipalities are collaborating to enhance efficiency; however, difficulties in co-operation have been reported
- A strong political influence has been remarked with mayors and prefects (head of departments) being elected in different periods; thus causing particularly frictions as regards landfill site selection

1.1.5 Examples of good practice identified as potential tools to improve implementation and enforcement in France

- Strategic approach towards prevention and recycling established within stakeholder round-table discussions ("*Grenelle Environnement*")
- New tax system installed with gradually increasing incentives to shift the waste management system from disposal operations towards recycling
- Support of research projects with emphasis on waste prevention by ADEME
- Additional safety feature requested for landfilling in terms of bottom sealing systems

1.1.6 Priority activities for waste management in France

- Further establish and modernise treatment infrastructure, especially enhancement of separate collection
- Encourage municipalities to co-operate in the area of improving common waste management infrastructure
- Further increase public awareness to encourage and improve waste separation at source
- Reduce disposal capacity (incineration and landfill)
- Increase material recovery rate for biodegradable wastes (separate collection at major producers, anaerobic digestion, etc)

1.1.7 Proposals, suggestions and needs addressing the EU Commission

- Revise the concept of the Landfill Directive regarding bottom sealing layer taking into account the progress in the field of engineering
- Revise WAC certain limit values for specific wastes (e.g. soils)

2 Annex II: Agendas and participation lists

2.1 Agenda of workshop on landfill of waste in France 2009

11 June 2009

9:30	<i>Registration, Come together, including Coffee</i>
10:00	Jean-Pierre Thorey, DRIRE Bourgogne <i>Ouverture du séminaire</i>
10:10	Ferdinand Zotz, BiPRO GmbH <i>Introduction au projet UE</i>
I. LEGISLATION PERTINENTE ET STATUS QUO	
10:20	Ferdinand Zotz, BiPRO GmbH <i>Vue d'ensembles des exigences législatives européenne- la mise en décharge des déchets</i>
10:50	José-Jorge Diaz del Castillo, DG Environnement <i>L'implémentation de la législation Européenne - Point de vue de la CE</i>
11:20	Eric Gaucher, Représentant du Ministère de l'Ecologie, de l'Energie, du Développement Durable et de l'Aménagement du Territoire <i>La réglementation nationale / Le parc des installations de stockage de déchets</i>
11 :45	Jean-Pierre Thorey, DRIRE Bourgogne et Bernard Gournay, DDE Côte d'Or <i>Les procédures d'autorisation</i>
12:15	Question and Discussion
12:30	LUNCH BREAK
II. ASPECTS SPECIFIQUES DE L'APPLICATION ET ECHANGES D'EXPERIENCES	
14:00	Ferdinand Zotz, BiPRO GmbH <i>Les exigences législatives européennes – procédures d'admission</i>
14:15	Dominique Guyonnet BRGM <i>Retour d'expérience sur la barrière passive et les critères d'admission</i>
14:35	Olivier Bour, INERIS <i>Maîtrise des risques en relation avec le traitement/stockage des déchets non dangereux</i>
14:50	PAUSE CAFE
15:10	Isabelle Hebe, ADEME <i>Limiter les émissions de biogaz à l'atmosphère</i>
15:30	Questions et Discussion
16:30	FIN DE LA PREMIERE JOURNEE DE SEMINAIRE

12 June 2009

III. EXCURSION	
8:30	Excursion à SITA FD, DRAMBON (Départ prévu 8:30; Durée de la visite environ 9:30 à 11:30)
12:30	FIN DU SEMINAIRE

Table 2-1: Final agenda for the workshop on landfill of waste in France 2009

2.2 Participation list of workshop on landfill of waste in France

	Name	Institution	Phone/Fax	E-mail	Address
1	Jorge José Diaz del Castillo	EU Commission, DG Environment		Jose-Jorge.Diaz-Del-Castillo@ec.europa.eu	Avenue de Beaulieu 5, B-1049 Brussels
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Table 2-2: Final participant list for the workshop on landfill of waste in France 2009

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