



Waste classification, sampling and analysis

**Umwelt
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“Exchange of experience in implementing the Waste Framework Directive, the Landfill Directive and the POP Regulation in Bulgaria“.

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Contents

1.	Introduction	4
2.	Classification of Waste	7
2.1	Legal Background	7
2.2	Guidance for carrying out waste classification	9
3.	Sampling and Analysis of Waste	14
3.1	Legal Background	14
3.2	Guidance for carrying out waste sampling and analysis	16

1. Introduction

General legal background

The aim of the European waste policy is the promotion of the circular economy to conserve national resources on the one side and to protect the human health and environment on the other side.

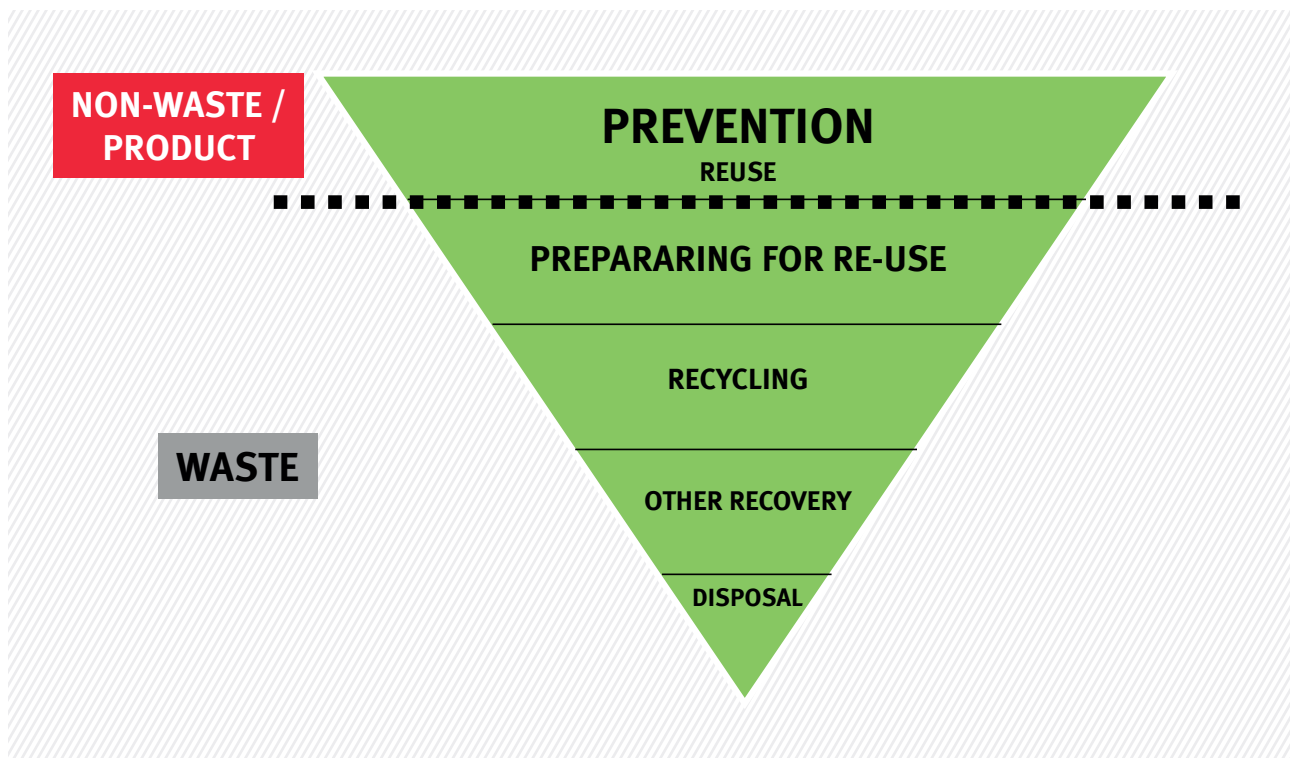
A decisive interface, whether and how waste is to be managed in this context in accordance with the legal requirements, is the correct identification of waste, including its hazardous properties (waste classification). The relevant aspects are regulated in Directive 2008/98/EC on waste (Waste Framework Directive, WFD) and the Commission Decision on the European List of Waste (2000/532/EC, LoW).

The WFD sets out the basic requirements on waste management, including for instance the “polluter pays principle”, the “waste hierarchy” and the need to ensure that waste management is carried out without endangering human health or the environment.

Next to the WFD the Directive 1999/31/EC on the landfilling of waste (Landfill Directive, LD) together with the Council Decision establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 and Annex II of the LD (Waste Acceptance Criteria Decision, WAC Decision), the Directive 2010/75/EU on industrial emissions and the Regulation EC (No) 850/2004 on persistent organic pollutants (POPs, POP Regulation) contain requirements on the correct management of waste.

Figure 1:

Waste hierarchy



The LD and the WAC Decision include information and requirements on the procedure for the acceptability of waste at landfills, which are necessary to dispose of waste in a way without endangering human health or the environment.

This procedure consists of the basic characterization, compliance testing and on-site verification as defined in section 3 of Annex II to the LD. The basic characterization, as well as the following compliance testing include standardised analysis and behaviour-testing methods of the short and long-term leaching behaviour and/or characteristic properties of the waste.

To obtain reliable analysis results which are representative for a bigger waste amount, the correct sampling methods are important.

Against this background, the brochure contains information and guidance on classification, sampling and analysis of waste.



Regional landfill for non-hazardous waste Sozopol



Regional landfill for non-hazardous waste Sozopol

About the brochure

The brochure was developed within the project “Exchange of experience in implementing the Waste Framework Directive, the Landfill Directive and the POP Regulation in Bulgaria”. The overall aim of the project was the exchange of experience and transfer of knowledge with regard to the application of the European waste legislation in Bulgaria. In particular, the knowledge transfer should improve the capability of relevant actors in Bulgaria to carry out the following activities:

- classification of waste as hazardous/non-hazardous according to the LoW and Annex III of the WFD;
- performing a basic characterization of waste in order to identify and evaluate all relevant information, which is required to ensure proper waste management;
- identification of waste types, which contain POPs, according to their origin and environmentally sound disposal according to the POP Regulation;
- sample taking, selection and preparation of a representative waste sample for different industrial waste types for analysis.

The exchange of experience was mainly done via a workshop (*“Exchange of experience on implementation of EU waste legislation considering waste classification, sampling and analysis”*), which took place in Sofia, Bulgaria, on the 21st - 23rd of January 2015. In total, more than 60 participants, comprising representatives of the Bulgarian Ministry of Environment and Water, the Executive Environment Agency, regional and local authorities as well as industry representatives attended the workshop. In addition to the Bulgarian participants, three members of the project team and four experts from Germany contributed to the information exchange.

Along with the workshop, the exchange of experience should be done by providing specific materials and relevant documents to the involved Bulgarian actors. These materials shall enable concerned actors to carry out classification, sampling and analysis of waste and to instruct further colleagues about these topics.

Therefore, this brochure, in particular, contains a compilation of links to relevant information sources with regard to classification, sampling and analysis of waste.

This document is mainly intended to assist the Bulgarian Ministry of Environment and Water, the Executive Environment Agency, the Regional Inspectorates of Environment and Water and local authorities to further communicate the gained knowledge (especially during the workshop) within their institutions and to possibly also inform other stakeholders in Bulgaria dealing with classification, sampling and analysis of waste.

The provided list of information sources is not intended to be exhaustive. Besides, it should be considered that the indicated links may change over time and that several documents may be reviewed and updated in the near future.



Laboratory for waste analysis, ExEA

2. Classification of Waste

2.1. Legal Background

The WFD stipulates a number of specific obligations and stricter requirements for producers and waste holders in case waste is considered hazardous, inter alia hazardous waste subject to specific control (Article 17), including tracking system, mixing ban (Article 18), labelling (Article 19) and specific requirements for waste treatment facilities (Article 25(2)). Since treatment costs for hazardous waste are considerably higher than for non-hazardous waste, proper classification of waste is at the same time of great importance from the economic point of view in waste management practice.

The LoW is the key document for classification of waste. A consolidated version of the LoW exists since 2000. The LoW has been thoroughly revised in 2014, in order to align it with the scientific progress and the developments in chemicals legislation. Legally, the LoW is a decision addressed to the EU Member States. Consequently, Member States are obliged to publish legal national documents “mirroring” the LoW, which are in principle the relevant reference documents for economic operators and national authorities.

Further, classification according to LoW enables economic operators and supervising authorities for a decision in terms of the question whether waste is hazardous or not. In this respect, the LoW recognises three types of entries:

- “Absolute hazardous entries”: In all cases, where the classification along the LoW criteria leads to the allocation of a LoW entry marked with an asterisk (*), the waste is assumed actually exhibiting properties which render it hazardous and thus is considered hazardous;
- “Absolute non-hazardous entries”: In all cases, where the classification along the LoW criteria leads to the allocation of a LoW entry not marked with an asterisk (*), the waste is assumed not exhibiting properties which would render it hazardous and thus is considered non-hazardous;
- So-called “mirror entries”, where waste from the same source might be hazardous or non-hazardous depending on the specific case and on the composition of the waste.

Figure 2:

Extract of the LoW

01	WASTES RESULTING FROM EXPLORATION, MINING, QUARRYING, AND PHYSICAL AND CHEMICAL TREATMENT OF MINERALS
01 01	wastes from mineral excavation
01 01 01	wastes from mineral metalliferous excavation
01 01 02	wastes from mineral non-metalliferous excavation
01 03	wastes from physical and chemical processing of metalliferous minerals
01 03 04*	acid-generating tailings from processing of sulphide ore
01 03 05*	other tailings containing hazardous substances
01 03 06	tailings other than those mentioned in 01 03 04 and 01 03 05
01 03 07*	other wastes containing hazardous substances from physical and chemical processing of metalliferous minerals

* hazardous

In Bulgaria, the following legal documents regarding waste classification exist:

- Guidance for implementation of basic characterization and application of the criteria for acceptance of waste at the various classes of landfills (approved by Order RD-156/03.04.2015 of the Minister of Environment and Water);
- Order RD-950/13.12.2014 of the Minister of Environment and Water on methods for waste testing in order to perform basic waste characterization and simplified procedures for waste testing and requirements for site checks, including methods for fast checks of waste;
- Order RD-647/26.08.2014 of the Minister of Environment and Water on criteria for acceptance of monolithic waste on different classes of landfills;
- Order RD-250/21.04.2015 regarding the sampling methods and testing of waste components for classification and the procedure for the preparation and coordination of the plan for sampling.



Mineral waste for classification

Where to find legal information:

On the following links legal information and relevant legal and informative documents concerning inter alia classification of waste are published.

EU:

Homepage of the European Commission:

<http://ec.europa.eu/environment/waste/>

Homepage of the European Chemicals Agency:

<http://echa.europa.eu/>

BG:

Homepage of the Executive Environment Agency:

<http://eea.government.bg/bg/legislation/waste>

- <http://eea.government.bg/bg/legislation/waste/rakovodstvo-za-izvarshvane-na-osnovno-oharakterizirane-na-otpadatsite-i-prilagane-na-kriteriite-za-priemane-na-otpadatsi-na-razlichni-klasove-depa>
- http://eea.government.bg/bg/legislation/waste/zapoved_RD_950_13_12_2014.pdf
- http://eea.government.bg/bg/legislation/waste/Zapoved_RD647_26_08_14.pdf
- http://eea.government.bg/bg/legislation/waste/doc-2015/zapoved_2502.pdf

Information

- Please check these links regularly to be aware of any new developments regarding the legal background for waste classification

2.2. Guidance for carrying out waste classification

Due to the complexity of waste classification, stakeholders involved may have difficulties to assess whether waste has to be considered hazardous or non-hazardous. The following compilation of information sources provides support to the stakeholders involved in waste classification.

Information

It should at this point, however, be highlighted that most of the available documents will be updated due to the current amendments to the LoW, a major revision of hazardous properties and the adoption of the new system of chemical classification. Nevertheless, it is expected that the updated versions of relevant documents will be made publicly available on the same homepages.

- Therefore, please check these homepages regularly for updates

Relevant Guidance Documents in Bulgaria:

Currently there are no specific Bulgarian guidance documents on waste classification in place. The generators of waste shall follow the provisions of the Ordinance No 2/23.07.2014 on waste classification. With the ordinance the provisions of the LoW, the WFD and respective EU Decisions are transposed.

Relevant Guidance Documents on international/EU level:

Currently, a **guidance document** on the definition and classification of hazardous waste is being developed by BiPRO GmbH on behalf of the **European Commission, DG Environment**. The document will contain non-binding guidance regarding classification of waste in the framework of the WFD and the LoW.

The document will also include the latest amendments of the WFD and the LoW. The purpose of this document is to assist national authorities and economic operators with guidance on how to understand and apply the aforementioned legislation.

Information

The final guidance document is expected to be published by DG Environment (presumably under the section waste related studies: <http://ec.europa.eu/environment/waste/studies/index.htm>) by the mid/end of September 2015.

Various comprehensive **technical guidance documents**, in particular also in relation to the classification and management of waste containing or contaminated with POPs are available at the **Basel Convention homepage** (Convention on the control of transboundary movement of hazardous waste and their disposal, <http://www.basel.int/>). The technical guidelines are principally meant to provide guidance to countries which are building their capacity to manage waste in an environmentally and efficient way. The documents are being constantly reviewed and updated in accordance to the technical developments.

Information

The adopted technical guidance documents are available at:
www.basel.int/Implementation/TechnicalMatters/DevelopmentofTechnicalGuidelines/AdoptedTechnicalGuidelines/tabid/2376/Default.aspx

Further technical guidance documents related to POPs wastes, can be accessed at:
www.basel.int/Implementation/POPsWastes/TechnicalGuidelines/tabid/2381/Default.aspx
and
www.basel.int/Implementation/POPsWastes/Meetings/MeetingoftheSIWGonPOPs/tabid/4349/Default.aspx

- For updates please see the above mentioned homepage

Relevant Guidance Documents in other EU MS - United Kingdom (UK):

The Waste Classification Technical Guidance from the UK Environment Agency is a technical guidance on how to assess and classify waste (“Technical Guidance WM3: waste classification – Guidance on the classification and assessment of waste”, published in 2014).

The comprehensive guidance is for anyone involved in generation, management and legal regulation of waste. Appendix A includes the LoW codes for hazardous and non-hazardous waste. It is one of the most current guidance documents available (last update of the document was made in July 2015).

Information

The current UK guidance document can be downloaded at:

www.gov.uk/government/publications/waste-classification-technical-guidance

- For updates please review the above mentioned homepage

Relevant Guidance Documents in other EU MS - Ireland (IE):

Another relevant homepage/guidance document, which should be pointed out is the homepage on hazardous waste classification of the Environmental Protection Agency (EPA) of Ireland, which includes a hazardous waste classification tool and worksheet.

The waste classification tool was first published in 2002, updated in 2004 and amended in 2013 (a separate document is available on the amendments made). Similar to the UK guidance, it is expected that further updates to the tool and worksheet will follow in the near future.

Information

- For up-to-date information please see: <http://www.epa.ie/waste/municipal/waste-class/#.VbYlp4sVimQ>

Relevant Guidance Documents in other EU MS - Germany (DE):

In order to facilitate proper waste classification, the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) has issued a document titled “Guidelines on the Application of the Waste Catalogue Ordinance” (in German: “*Hinweise zur Anwendung der Abfallverzeichnis-Verordnung*”, published in 2005).

Information

The document and several additional related documents can be accessed at the BMUB homepage: http://www.bmub.bund.de/themen/wasser-abfall-boden/abfallwirtschaft/wasser-abfallwirtschaft-download/artikel/abfallverzeichnis-verordnung-avv/?tx_ttnews%5Bwords%5D=Abfallverzeichnis&tx_ttnews%5BbackPid%5D=921&cHash=6735f95af315b51b684179aa9b26b0db

An English translation of the BMUB guidance document is available at:

<http://www.bmub.bund.de/en/service/publications/downloads/details/artikel/guidelines-on-the-application-of-the-waste-catalogue-ordinance/>

- For updates please review the above mentioned homepage

Another valuable source of information is the German information platform for waste assessment, which has been developed by several Federal States in order to support enforcement (in German: Informations – Portal – Abfallbewertung, IPA). The platform contains an extensive compilation of information (including a number of factsheets for different waste streams) and also covers basic characterization and classification of waste according to the LoW. However, the provided information is available in German only.

Information

General information related to the IPA platform can be accessed at:

www.abfallbewertung.org/

A number of factsheets, dealing with various waste streams and covering among other issues also examples related to classification of those waste streams, is available at:

www.abfallbewertung.org/repagen.php?report=ipa

Besides, the IPA homepage contains a summary of relevant provisions and guidance documents developed on a Federal State level. The guidelines are available in German only:

www.abfallbewertung.org/repagen.php?report=ipa&char_id=Altholz&lang_id=de&avv=&synon=&kapitel=5>active=no

- For updates please see: www.abfallbewertung.org/

Some of the more recent guidance documents on Federal State level are indicated in the following:

Information

Implementation notes for classification of waste to waste types listed with mirror entries in the LoW, Brandenburg, 2012 (in German: “Vollzugshinweise zur Zuordnung von Abfällen zu den Abfallarten eines Spiegeleintrages in der Abfallverzeichnis-Verordnung vom 07.03.2012“):

http://bravors.brandenburg.de/br2/sixcms/media.php/76/Amtsblatt%2018_12.pdf

Implementation notes for classification of waste to waste types listed with mirror entries in the LoW; Saarland, 2011 (in German: “Vollzugshilfe zur Zuordnung von Abfällen zu den Abfallarten eines Spiegeleintrages der Verordnung über das Europäische Abfallverzeichnis (AVV)“):

www.saarland.de/dokumente/thema_abfall/vollzugshinweise2011.pdf

Classification of wastes according to their hazard properties; Saxony-Anhalt, 2013 (in German: “Einstufung von Abfällen anhand ihrer Gefährlichkeit“):

www.lau.sachsen-anhalt.de/fileadmin/Bibliothek/Politik_und_Verwaltung/MLU/LAU/Abfallwirtschaft/Gefaehrliche_Abfaelle/Dateien/Datensammlung_Abfalleinstufung_Stand_31_07_2013.pdf

This document is specifically interesting as it contains a large number of practical examples on waste classification (examples highlighted within the document).

- For updates please review the above mentioned homepages of the Federal States

Available documents from the workshop “Exchange of experience on implementation of EU waste legislation considering waste classification, sampling and analysis”, Sofia, 21st - 23rd January 2015

In addition to the available guidance documents indicated above the presentations from the workshop specifically focusing on waste classification can be used. The relevant presentations mentioned below and supplementary documents can be obtained from the Bulgarian Executive Environment Agency.

“Overview on current developments in the area of European requirements regarding the classification of waste according to Annex III WFD and the LoW”

Mr. Joachim Wuttke, German Federal Environment Agency (Umweltbundesamt, UBA), Germany

This presentation focuses on the amendment of the LoW (i.e. Annex III of the WFD and waste classification). The new legislative requirements regarding waste classification are introduced, also by identifying and comparing the existing and new requirements to be introduced (e.g. “old” vs. “new” terminology, examples of old and new classification). Besides, the revision process of the LoW is presented in more detail, discussing different hazardous properties (i.e. preparatory work concerning revision, expert working group, results of revision; including definitions and limit values).

“Practical approach for classification of waste according to the LoW”

Dr. Michael Oberdörfer, State Agency for Nature, Environment and Consumer Protection North Rhine-Westphalia, Germany

In this presentation the structure and the content of the 20 chapters of the LoW are explained in detail. Further, it shows the general procedure for identifying particular waste entries and discusses the listing of hazardous waste within the LoW. It also summarizes some of the main problems of the LoW, as that it quite often happens that no adequate entries are available for wastes, which are generated in practice.

“Identification of hazardous waste if wastes have complementary waste codes according to the LoW”

Dr. Michael Oberdörfer, State Agency for Nature, Environment and Consumer Protection North Rhine-Westphalia, Germany

This presentation focuses on the classification of mirror entries according to the LoW and presents a number of examples of such entries which can refer to certain hazardous substances (e.g. heavy metals), certain hazardous properties (e.g. infection) or to hazardous substances in general (i.e. containing hazardous substances). In case of mirror entries, it is necessary to investigate whether the respective waste contains certain hazardous substances, hazardous substances not explicitly named or possesses certain hazardous properties. The procedure of assessing hazardous properties and the testing of waste in Germany are therefore explained in more detail and some practical examples are introduced in this connection (e.g. German proposal for testing procedure of H14 (ecotoxicity)). In conclusion it is mentioned that the assessment of hazardous properties of mirror entries is complicated and that local and regional authorities often do not have the knowledge of relevant regulations. Therefore, knowledge exchange between different competent authorities is important. Besides, the publication of a European guideline for the assessment of mirror entries is crucial.

Additionally the topic on identification of POP waste was presented at the workshop.

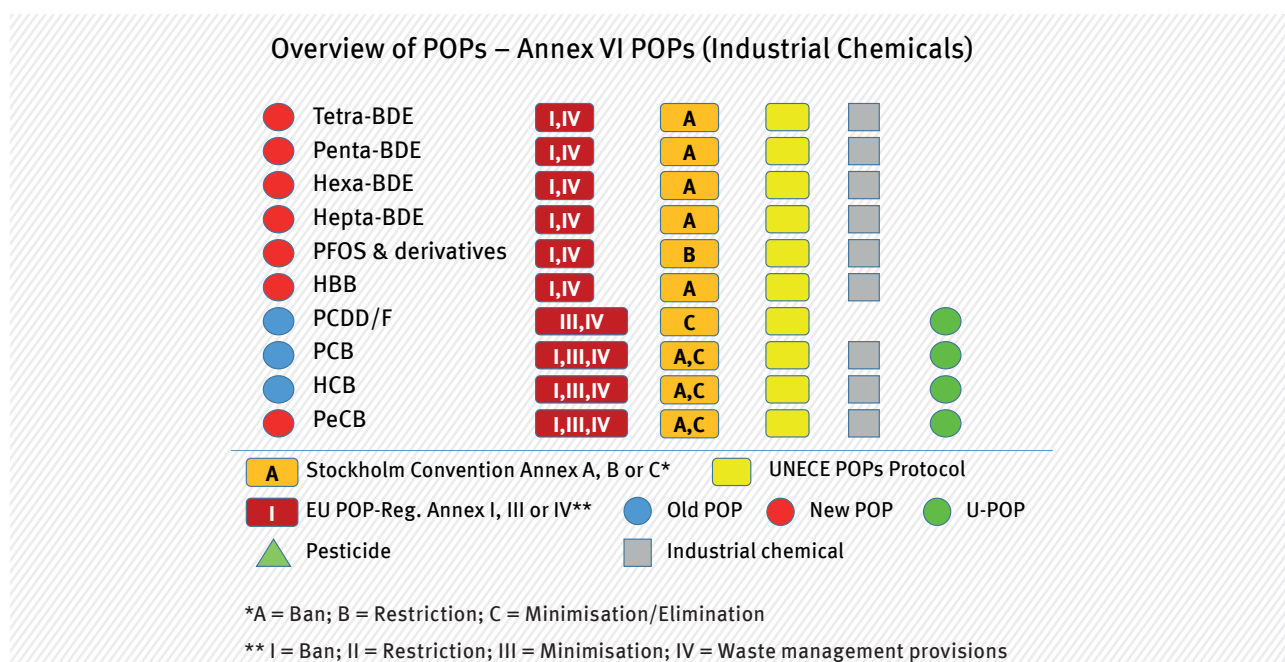
“Identification of POP waste (origin and analysis)” and “Environmentally sound disposal of POP waste”
Mr. Milos Milunov, BiPRO GmbH, Germany

The main aim of the presentations is to provide an overview on POPs and candidate POPs and indicate their origin, use, generation, relevant types of waste, available standardized analytical methods for the chemical analysis and finally to summarize available environmentally sound waste management operations for waste containing, consisting of or being contaminated with POPs. The presentations contain:

- a summary of relevant international agreements (i.e. Stockholm Convention and UNECE POPs Protocol) and legislation, covering the POP Regulation in more detail with focus on the most important Articles of the Regulation considering waste issues (in particular Art. 7, Annex IV and V of the POP Regulation);
- an overview of POPs (from different categories such as pesticides, industrial chemicals), showing their current status under the Stockholm Convention and the UNECE Protocol (i.e. ban, restrictions, minimization/elimination, waste management provisions);
- information about the origin, use, generation, types of waste and waste management of different POPs, covering the “old POPs” (mainly pesticides), “new POPs” (listed in 2009 or later), “U-POPs” (unintentionally generated POPs such as PCDD/F) and “candidate POPs” (possibly regulated by the POP Regulation in the future) with an accent on the environmentally sound disposal of relevant waste streams;
- a summary of available analytical measurement methods and methods under development for the identification of POPs in relevant wastes/matrices (e.g in POP pesticides, plastics).

Figure 3 :

Overview of POPs - Annex VI POPs (Group 1: Pesticides)



3. Sampling and Analysis of Waste

3.1. Legal Background

Sampling and analysis is required by different waste related directives (e.g. according to the LD). The LD and the WAC Decision include information and requirements on the procedure for the acceptability of waste at landfills, which is necessary to dispose of waste in a way without endangering the human health and environment. This procedure consists of the basic characterization, compliance testing and on-site verification as defined in section 3 of Annex II to the LD. The basic characterization as well as the following compliance testing include standardised analysis and behaviour-testing methods of the short and long-term leaching behaviour and/or characteristic properties of the waste.

The WAC Decision provides in section 3 of its annex relevant information and requirements regarding the sampling of waste. This includes information on the person who can carry out the sampling and the requirement to establish a sampling plan as well as information on relevant EU standards which can be used for carrying out the analysis.

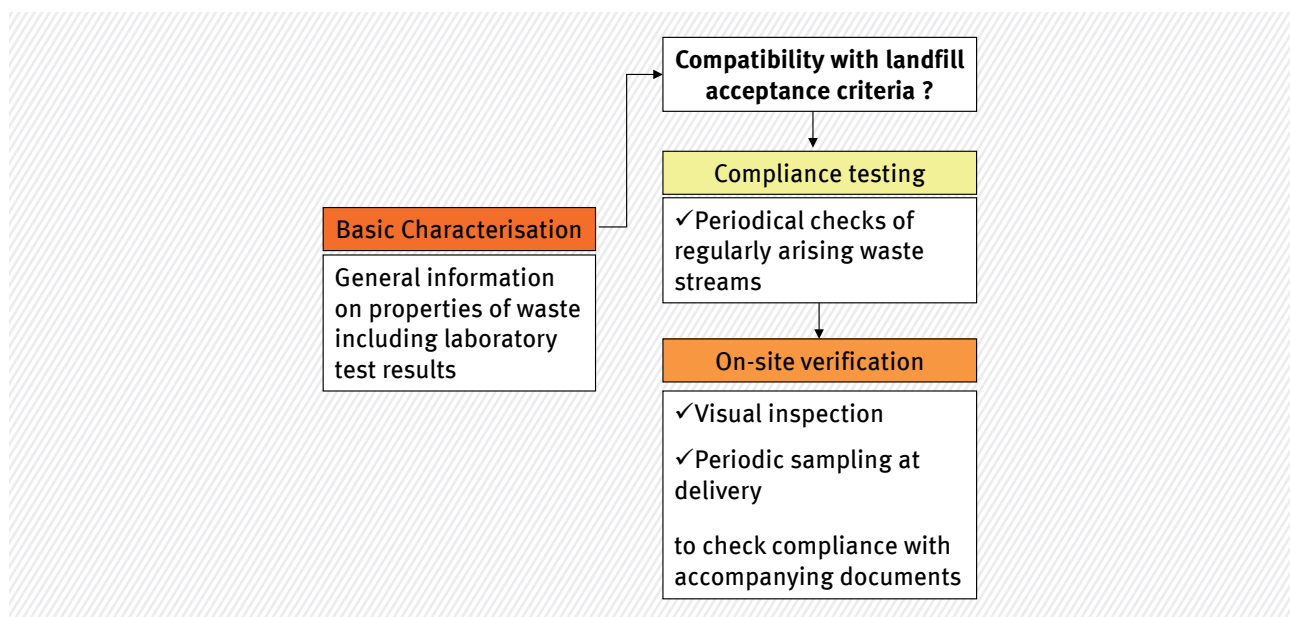
Other legislation (e.g. Directive 2010/75/EU on industrial emissions) also include the obligation for sampling and testing.

On EU level various standards for sampling of waste exist such as EN 14899 “Characterization of waste - Sampling of waste materials - Framework for the preparation and application of a Sampling Plan”, CEN/TR 15310-1-5 “Characterization of waste - Sampling of waste materials” and EN 14735 “Characterization of waste - Preparation of waste samples for ecotoxicity tests”.

Relevant EU standards for carrying out the analysis of waste are provided for the specific parameters such as BDS EN 12457-4 “Characterization of waste. Leaching. Compliance test for leaching of granular waste materials and sludges. Part 4: One stage batch test at a liquid to solid ratio of 10 l/kg for materials with particle size below 10 mm (without or with size reduction)” and EN 13137 “Determination of total organic carbon (TOC) in waste, sludges and sediments”.

Figure 4 :

Procedure for the acceptability of waste at landfills



In Bulgaria, the requirements of the LD and the WAC Decision regarding sampling and testing are implemented by the following legal acts:

- Ordinance No 6/27.08.2013 on the conditions and requirements for construction and operation of landfills and other facilities and installations for waste recovery and disposal (promulgated in SG No 80/13.09.2013);
- Order RD-950/13.12.2014 of the Minister of Environment and Water on methods for waste testing in order to perform basic waste characterization and simplified procedures for waste testing and requirements for site checks, including methods for fast checks of waste;
- Order RD-647/26.08.2014 of the Minister of Environment and Water on criteria for acceptance of monolithic waste on different classes of landfills;
- Order RD-250/21.04.2015 regarding the sampling methods and testing of waste components for classification and the procedure for the preparation and coordination of the plan for sampling.

Where to find legal information:

On the following links legal information and relevant legal and informative documents concerning i.a. sampling and analysis are published:

EU:

Homepage of the European Commission:

<http://ec.europa.eu/environment/waste/>

BG:

Homepage of the Executive Environment Agency:

<http://eea.government.bg/bg/legislation/waste>

- <http://eea.government.bg/bg/legislation/waste/Naredba6-13.pdf>
- http://eea.government.bg/bg/legislation/waste/zapoved_RD_950_13_12_2014.pdf
- http://eea.government.bg/bg/legislation/waste/Zapoved_RD647_26_08_14.pdf
- http://eea.government.bg/bg/legislation/waste/doc-2015/zapoved_2502.pdf



Compost

Information

- Please check these links regularly to be aware of any new developments regarding the legal background for waste classification

3.2. Guidance for carrying out waste sampling and analysis

Depending on the needs of the client analysis of waste may have different objectives. For instance, waste producers want to know what kind of recovery/disposal is possible, managers of waste treatment plants need to know if they can accept and will be able to treat the waste and authorities are interested in the environmental effects related to a particular waste. The different needs of the concerned actors lead to different testing programmes in which sample taking is required. The strategy of sampling and analysis has to be planned in advance very carefully in order to avoid useless efforts and unnecessary costs. The correct procedure of sampling is very important to get a representative sample of the specific waste subject to testing.

A representative sample of a specific waste is important to ensure the reliability of analysis results obtained, which is the decision basis for the subsequent choice of waste management operations and handling (e.g. specific additional requirements for hazardous waste).



Sample taking



Samples

Relevant Guidance Documents in Bulgaria:

The Ministry of Environment and Water published a guidance document for carrying out basic characterization of waste and applying the criteria for acceptance of waste at different landfill classes for carrying out sampling and analysis.

This guidance document includes information on the procedure which has to be carried out for a basic characterization, including the elaboration of a sampling plan. For the practical sample taking, this guideline refers to the CEN/TR 15310 - 1-5 (see below) and the Austrian standard ONORMS 2123-3 "Sampling of solid waste out of material streams".

This guidance document shall be used for carrying out a basic characterization of waste, including sampling and testing.

Information

The guidance document can be found at:

http://eea.government.bg/bg/legislation/waste/doc-2015/Guidance_Pretreatment_Landfilling_1.pdf

http://eea.government.bg/bg/legislation/waste/doc-2015/zapovedRD664_1.pdf

Relevant Guidance Documents on international/EU level:

Currently, a **guidance document** on the definition and classification of hazardous waste is being developed by BiPRO GmbH on behalf of the **European Commission, DG Environment** (see section 2.2 above). This document will also contain a section on sampling and analysis of waste.

Information

The final guidance document is expected to be published by DG Environment (presumably under the section for waste related studies:

<http://ec.europa.eu/environment/waste/studies/index.htm>) by the mid/end of September 2015.

Additionally, several standards and technical reports exist on EU level regarding sampling and analysis, as for instance:

- EN 14899: Framework for the preparation and application of a Sampling Plan;
- CEN/TR 15310-1: Characterization of waste. - Sampling of waste materials - Part1: Guidance on selection and application of criteria for sampling under various conditions;
- CEN/TR 15310-2: Characterization of waste. - Sampling of waste materials - Part2: Guidance on sampling techniques;
- CEN/TR 15310-3: Characterization of waste. - Sampling of waste materials - Part3: Guidance on procedures for sub-sampling in the field;
- CEN/TR 15310-4: Characterization of waste. - Sampling of waste materials - Part4: Guidance on procedures for sample packaging, storage, preservation, transport and delivery;
- CEN/TR 15310-5: Characterization of waste. - Sampling of waste materials - Part5: Guidance on process of sample defining the sampling plan;
- BDS EN 15002: Characterization of waste. Preparation of test portions from the laboratory sample.

The listed standards and technical reports are already addressed and referred to in the Bulgarian Guidance Document. Further standards for analysis of waste are listed e.g. in the Bulgarian Order of the Minister of Environment and Water defining test methods for waste components for their classification (see above).

Information

New developments of EU standards can be seen at: <http://standards.cen.eu/>.

Relevant national standards will be published at: <http://www.bds-bg.org/en>

Relevant Guidance Documents in other EU MS - UK

The UK Environment Agency provides a guidance document on “Waste sampling and testing for disposal to landfill”, detailing the sampling and testing that waste producers have to carry out to ensure their wastes are properly characterised. It contains general information on the waste acceptance procedure, information on waste classification, waste sampling and testing responsibilities, sampling and testing requirements and information interpretation.

Information

The current UK guidance document can be downloaded at:

<https://www.gov.uk/government/publications/waste-sampling-and-testing-for-disposal-to-landfill>

Further information on sampling can be found in Annex D of the waste classification technical guidance developed by the UK Environment Agency:

<https://www.gov.uk/government/publications/waste-classification-technical-guidance>

- For updates please see:
<https://www.gov.uk/government/publications>

Relevant Guidance Documents in other EU MS - DE:

In DE information and guidance on sampling of waste is provided in the LAGA PN 98 “*Guideline for procedures for physical, chemical and biological testing in connection with the recovery/disposal of waste*”.

This guidance document has been developed by the Joint Working Group of the Federal States on Waste. It contains all relevant information for carrying out the sampling of waste for subsequent analysis and is considered to be practical.

Information

This guidance document can be acquired from the LAGA homepage:

http://www.laga-online.de/servlet/is/23874/M33_LAGA_EW98T-p.pdf?command=downloadContent&filename=M33_LAGA_EW98T-p.pdf

(only available in German)

- For updates please see:
<http://www.laga-online.de/servlet/is/23874/>

Available documents from the workshop “Exchange of experience on implementation of EU waste legislation considering waste classification, sampling and analysis”, Sofia, 21st - 23rd January 2015

In addition to the available guidance documents indicated above presentations from the workshop especially focusing on waste sampling and analysis can be used. The relevant presentations mentioned below and supplementary documents can be obtained from the Bulgarian Executive Environment Agency.

“Overview on the European waste legislation (WFD, LD, POP Regulation)”

Mrs. Elisabeth Zettl, BiPRO GmbH, Germany

This presentation gives an overview of the European waste legislation, reviewing among others, general waste legislation covering various waste streams, such as the WFD, the LoW, the LD and the Waste Shipment Regulation (EC 1013/2006) as well as specific legislation dealing with certain waste streams, such as the POP Regulation, the Directive 2012/19/EU on waste electrical and electronic equipment (WEEE Directive) and the Directive 2000/53/EC on end-of life vehicles. Thereby, the major focus is on the WFD and the LD, particularly reviewing WAC procedures, sampling and testing methods, waste classification and treatment of waste. Further, the presentation contains information on the implementation of the LD with information on post-care exploitation activities, also including experiences and several examples from Germany.

“Performance of a basic characterization of waste, including recommendations for analysis methods”

Mr. Dieter Quantz, Germany’s National Accreditation Body (Deutsche Akkreditierungsstelle GmbH, DAkkS), Germany

This presentation provides information related to the performance of a basic characterization of waste as well as a number of recommendations for analysis methods. In addition to general information on basic characterization of waste, there is information on the determination of main (hazardous) components/contaminants of waste fractions.

The presentation also contains a detailed introduction to comprehensive analysis of declaration according to evidence of demonstration of correct disposal considering general parameters (e.g. pH of the eluate, conductivity, melting point, calorific value), inorganics (e.g. Cyanide, Ammonium, Nitrite), organics sum parameters/individual/group parameters (e.g. TOC; Extractable Organic Halogens, EOX; Adsorbable Organic Halogens, AOX; Polycyclic Aromatic Hydrocarbons, PAH; Polychlorinated Biphenyls, PCB), biological degradability, etc. Further, basic waste characterization and typical parameters for the purpose of routine waste material control are presented, including quality assurance issues.



Municipal solid waste

“Techniques for sample taking and selection of a representative waste sample”

Mr. Dieter Quantz, DAkKS, Germany

This presentation focuses on different sampling techniques and selection of a representative waste sample. It includes information on the standardization of sample taking as well as on a step-by-step approach on how to perform sampling of waste, starting with the inspection and documentation of solid waste, over the determination of the volume of basic amount and definition of the area of mixing samples to the collection, mixing, dividing and packaging of samples. The presentation also contains several examples from practice (e.g. separation of stones from railroads, cutting slots in bulk piles, sampling of bulky waste >120 mm).



Selection of sample material

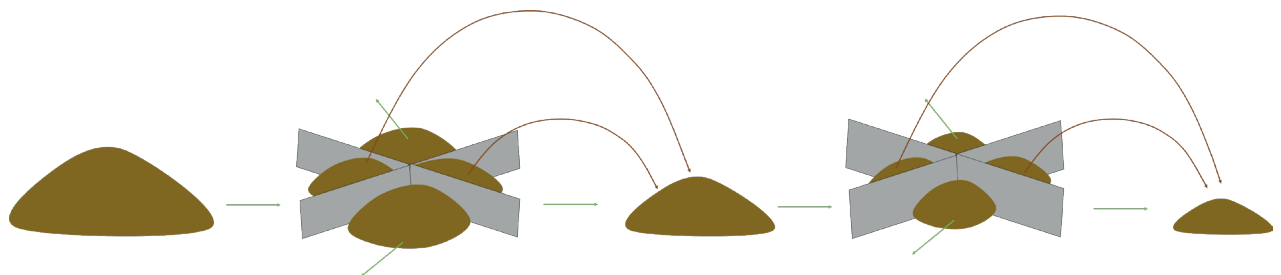
“Methods for analysis of compost and practical experience gained in classification of different categories of compost in Germany”

Mr. Stefan Blindeneder, AGROLAB Group, Germany

This presentation includes an introduction to legal conditions for utilizing compost, particularly focusing on the requirements set in the Biowaste ordinance (Bioabfallverordnung, BioAbfV) and Fertilizer regulation (Düngemittelverordnung, DüMV). It describes the quality system of the German Institute for Quality Assurance and Certification (RAL), defining for instance different quality for compost to fulfil the defined requirements of different uses. Further, it presents the most relevant analytical parameters which are regularly analysed according to different guidelines (e.g. hygiene, impurities, plant compatibility, etc.) as well as the applied methods for analysis. Additionally, the method of sampling is introduced in more detail.



Sampling technique

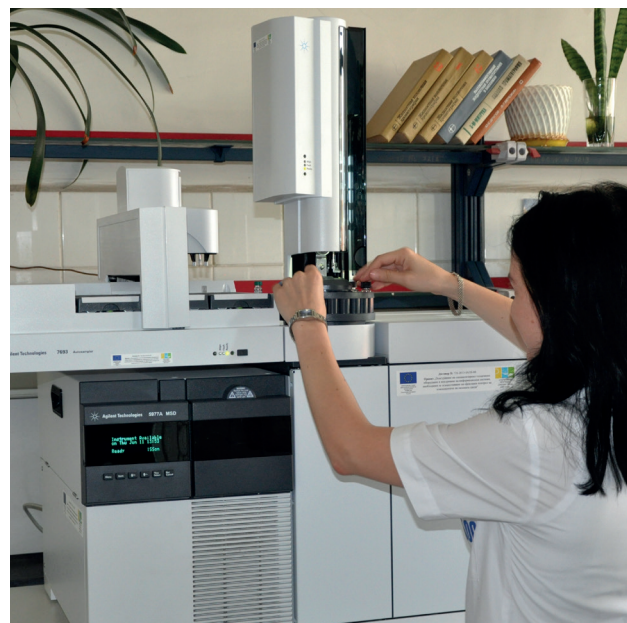


Technique for taking of representative sample

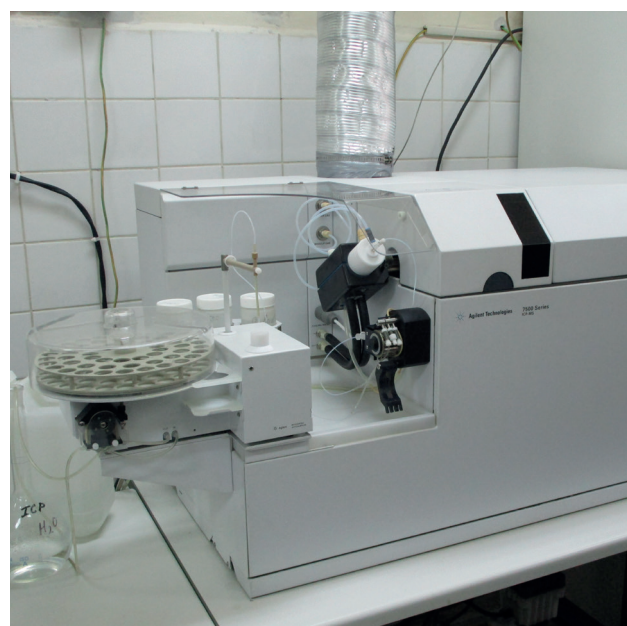
“Information and experience in analysis of waste in laboratory conditions”

Mr. Dieter Quantz, DAKkS, Germany

This presentation covers information and experience in analysis of waste in laboratory settings. It presents the special requirements for an accredited laboratory for waste and a number of parameter based quality assurance measures. Further, typically applied special equipment for sample preparation/processing (e.g. homogenisation equipment, mills, equipment for water separation, sample dividers, etc.) as well as special equipment used for sample analysis (e.g. ultraviolet-visible spectrometry, gas chromatography-mass spectrometry, atomic absorption spectrometry, microbiological laboratory equipment, etc.) are addressed. The presentation contains several pictures of typically used equipment for sample preparation/processing and analysis.



Gas chromatography



Mass spectrometry



Planetary mill for fine grinding of dried samples

“Information and experience in analysis of compost in laboratory conditions”

Mr. Stefan Blindeneder, AGROLAB Group, Germany

This presentation provides methods for the analysis of compost and experiences gained in classifying compost in different categories. It is focused on sample preparation from the first step when samples arrive to the laboratory to drying samples for the analysis done from dry matter. The presentation continues with the introduction of parameters to be determined from the dried matter such as ignition loss, heavy metals, total content of P_2O_5 , K_2O , MgO and total N. Further, parameters to be determined from the fresh matter are introduced as well, such as density, pH and salinity, plant available nutrients and compatibility.

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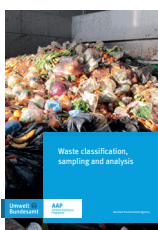
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