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# HEAVY METALS AND ORGANIC COMPOUNDS FROM WASTES USED AS ORGANIC FERTILISERS

*ENV.A.2./ETU/2001/0024*

## ANNEX 6

### QUESTIONNAIRE & SOURCES OF INFORMATION

By

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***ANNEX 6 – QUESTIONNAIRE AND  
SOURCES OF INFORMATION***

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## 1 QUESTIONNAIRE *COMPOST*

Dear colleagues,

In the context of the European Community Waste Management Policy and work on the biological treatment of biodegradable waste, the European Commission (Directorate-General for Environment, Directorate A – Sustainable Development and Policy Support) assigned a scientific study to the subject: “Heavy metals and organic compounds from wastes used as organic fertilisers”. The study is done by:

- Compost – Consulting & Development  
Technical Office for Agriculture  
Dipl.Ing. Florian Amlinger  
Austria
- WPA – consulting engineers inc.  
DI Dr.. Michael Pollak  
Austria
- Scuola Agraria del Parco di Monza  
Gruppo di Studio sul Compostaggio e la Gestione Integrata dei Rifiuti  
Dr. Enzo Favoino  
Italy

For the data collection and evaluation we may ask for your support in answering the following questions and help us by mentioning relevant surveys, data collections and reports. If it is not possible for you to send us a report via e- or snail-mail we also appreciate to obtain just the citation or the address of the institute where we could order the paper.

We would very much appreciate related reports prepared in or on behalf of your institution. If available you may also wish to forward our request to institutions, Universities or other contacts that are working in the areas concerned. In this case we may ask you to inform us via Cc in the mail.

We thank you very much in advance for your support and commitment. Please do not hesitate to contact us for further questions.

With best wishes

Sincerely, Yours

Enzo Favoino, Florian Amlinger

## Evaluation of pollutants in compost

**Table 1-1: Total potential Waste and the Processing situation**

Type of waste	Total Potential Waste t/ha	Processed in Composting plants		Processed through Backyard Composting	
	t/a	t/a	%	t/a	%
biowaste (source separated household waste)					
green waste (private and public park and garden waste)					
sewage sludge (on dry matter basis)					
Mixtures of green waste and sewage sludge					
MBT* and/or MSW**					

\*Mechanical biological treated residual waste; \*\* Municipal solid waste

### Heavy metals (PTEs) and organic pollutants (POPs) in compost, feedstocks for composting and stabilised organic waste

Could you provide us with national data/studies/reports on Quality of Compost and used source materials (feedstocks) concerning the following elements and organic pollutants

- **Potential toxic elements (PTEs):** Arsenic, Cadmium, Chromium, Copper, Mercury, Nickel, Lead, Zink.

If you have access to studies where additional PTEs are covered or are analysed due to legal requirements or scientific concern these are also of interest.

- **Potential organic pollutants (POPs):** PCB: Polychlorinated biphenyls; Hydrocarbons; PCCD/F: Polychlorinated dibenzofuran; PAH: polycyclic aromatic hydrocarbons; AOX: Adsorbable organic halogen; LAS: linear alkylbenzene sulphonates; NPE: Nonylphenol; DEHP: Di (2-ethylhexyl) phthalate

Further POPs: like Pesticides etc, if studies and data are available

These data should provide information on the **compost type and the input material** treated, considering the categories as follows:

- biowaste compost (source separated collection of organic household waste)
- green waste compost (parks and gardens)
- agroindustrial waste compost (food and fodder industries)
- sewage sludge compost
- stabilised organic waste (MSW treatment/mechanical biological treatment = MBT)
- liquid manure, slurry, solid manure
- paper

### Quality Variations

- We also ask for any additional information you might provide on specific studies and projects with comparative evaluation of spatial variations of compost quality due to
  - urban / rural areas
  - geogenetic origin
  - historical and/or actual industrial/mining activities
  - impact of collection schemes such as
    - pure food scrap/kitchen waste collection systems
    - mixed kitchen waste/garden waste systems collection with low volume bio-bags or low-volume buckets vs. high volume bio-bins (120 – 240 l)
    - collection frequencies
    - collection systems where paper is included
  - relevance of the proportion of impurities, and its relationship (if any) to collection schemes and size of the covered population
  - relevance of pre-treatment/screening systems

### **Analytical and statistical information**

- Can you provide information on analytical and statistical methods as related to the acceptance of tolerances and the fulfillment of limit values (task: comparative survey and evaluation of the used methods → reference for the scientific concept)
  - Sampling methods and frequencies
  - Number and requirements of repeated measurements within a single sampling
  - Tolerances for standard deviations/variance within a single measurement (intra laboratory tolerance)
  - Statistical methods/tolerances for the acceptance of a single analytical value or the evaluation of mean values
  - Analytical methods used (pretreatment of laboratory samples , screening; grinding; extraction agents such as aqua regia or nitric acid; CEN, ISO, national standards)
  - Product control of the responsible authority: system of sampling, analytical measurement, accepted tolerances in repeated measurements

## 2 QUESTIONNAIRE *FOOD AND FEEDINGSTUFFS*

### Heavy metals (PTEs) and organic pollutants (POPs)

Could you provide us with data/studies/reports on national or European level on the content of pollutants in foodstuffs concerning the following elements and organic pollutants

- **Potential toxic elements (PTEs):** Arsenic, Cadmium, Chromium, Copper, Mercury, Nickel, Lead, Zinc.

If you have access to studies where additional PTEs are covered or are analysed due to legal requirements or scientific concern these are also of interest.

- **Potential organic pollutants (POPs):** PCB: Polychlorinated biphenyls; Hydrocarbons; PCCD/F: Polychlorinated dibenzofuran; PAH: polycyclic aromatic hydrocarbons; AOX: Adsorbable organic halogen; LAS: linear alkylbenzene sulphonates; NPE: Nonylphenol; DEHP: Di (2-ethylhexyl) phthalate

Further POPs: like Pesticides etc, if studies and data are available

The following **type of foodstuffs** are of interest:

- |   |                                      |
|---|--------------------------------------|
| <input type="radio"/> Cereals             | <input type="radio"/> milk products  |
| <input type="radio"/> Potatoes            | <input type="radio"/> eggs           |
| <input type="radio"/> Rice                | <input type="radio"/> meat (cattle)  |
| <input type="radio"/> fruits              | <input type="radio"/> meat (pork)    |
| <input type="radio"/> vegetables (roots)  | <input type="radio"/> meat (sheep)   |
| <input type="radio"/> vegetables (leaves) | <input type="radio"/> meat (chicken) |
| <input type="radio"/> milk                | <input type="radio"/> fish           |

### Spatial variations of contamination

In addition information is of interest on specific studies and projects with comparative evaluation of spatial variations of PTEs and POPs concentration due to

- urban / rural areas
- geogenetic background concentration in soil
- historical and/or actual industrial/mining activities
- soil and plant protection management (use of pesticides)

### Threshold values

For which compounds in foodstuffs and/or fodder guide or threshold values exist in your country?

Could you provide the related legal regulations?

### 3 SOURCES OF INFORMATION (*SOURCE MATERIALS, MANURE, COMPOST*)

Country	Name	Institution
Austria	Univ. Doz. Dr. Erich M. Poetsch	BAL Gumpenstein, Department for Grassland
	Dr. Großgut	Österreichische Agentur für Gesundheit und Ernährungssicherheit GmbH, Lebensmitteluntersuchung Wien
	Maria Penisch	Österreichische Agentur für Gesundheit und Ernährungssicherheit GmbH, Lebensmitteluntersuchung Wien
	Dr. Karl Plsek	Federal Ministry for Social Security and Generations
Belgium	Ward Devliegher	Vlaco, Mechelen
	Kristof Bol	Vlaams Coördinatiecentrum Mestverwerking" (manure treatment coordination centre)
Denmark	Susan Christensen	Waste Centre Denmark, Virum
	Svend Eric Jepsen	Danish Ministry of the Environment
	Morten Brogger	Solum A/S
Finland	Juhani Puolanne	Finnish Environment Institute
	Arja Vuorinen	Plant Production Inspection Centre, Agricultural Chemistry Department, Vantaa
France	Marianne Bloquel	ADEME, French Agency of Environment and Energy Management, Angers
	Isabelle Feix	ADEME, French Agency of Environment and Energy Management, Angers
	Fabienne Muller-David	ADEME, French Agency of Environment and Energy Management, Angers
	Sabine Houot	INRA, EGC Soil Science
Germany	Dr. Claus Bannick	Umweltbundesamt, FG III 3.2 Sonderabfallentsorgung
	Dr. Bergs	Bundesministerium für Umwelt
	Josef Barth	Informa, Ingenieurbüro für Information und Marketing in der Abfallwirtschaft
	Dr. Bertram Kehres	Bundesgütegemeinschaft Kompost e.V.
	Prof. Dr.-Ing.. Martin Kranert	FH Wolfenbuettel
	Dr. Markus Weyers	EdDe, Entsorgungsgemeinschaft der Deutschen Entsorgungswirtschaft e.V.
	Corinna Hoffmann-Nogai	Landesumweltamt NRW, Außenstelle Düsseldorf
Ireland	Brian Donlon	EPA, Environmental Protection Agency

Country	Name	Institution
Italy		
Luxembourg	Juliette Mathieu	AEV, Administration de l'Environnement, Division des Dechet
Netherlands	Tim Brethouwer	ESSENT Milieu
	Katie Willis	VVAV, Dutch Waste Processing Association, Utrecht
	Piebe Hotsma	Ministry of Agriculture
	Dr. Simon W. Moolenaar	NMI, Nutrient Management Institute
Norway	Carl Einar Amundsen	Jordforsk, Centre for Soil and Environmental Research, Ås
	Henrik Lystad	Jordforsk , Biologisk Avfallshåndtering, Ås
Portugal	Ana Silveira	University of Lisbon
Spain	Silvia Burés	University of Agriculture, Barcelona
	Dr. Rodolfo Canet-Castello	Valencian Institute for Agricultural Research (IVIA) Department of natural resources
	Ana Rodríguez Cruz	Ministerio de Medio Ambiente, S.G. Calidad Ambiental
	Dr. Begoña Fabrellas Rodríguez	Study and Characterization of COPs Project CIEMAT
	Francesc Giró i Fontanals	Waste Department Catalunya, Barcelona
	Montserrat Soliva Torrento	Escola d' Agricultura de Barcelona. Universitat Politecnica de Catalunya. Barcelona.
Sweden	Håkan Jönsson	Department of Agricultural Engineering, SLU, Swedish University of Agricultural Sciences, Uppsala
	Simon.Lundeberg	Swedish EPA
	Leif Nilsson	The Swedish Association of Waste Management, Malmö
Switzerland	Dr. Hans Jörg Bachmann	Eidg. Forschungsanstalt für Agrarökologie und Landbau (FAL), Zürich
	René Flisch	Eidg. Forschungsanstalt für Agrarökologie und Landbau (FAL), Zürich
	Jochen Mayer	Eidg. Forschungsanstalt für Agrarökologie und Landbau (FAL), Zürich
	Dr. Harald Menzi	Schweiz. Hochschule für Landwirtschaft (SHL), Zollikofen
	Dr. Konrad Schleiss	Umwelt- und Kompostberatung, Baar
United Kingdom	Helen Anderson	Waste Section Aberdeenshire Council
	Dr Jane Gilbert	The Composting Association, Northants
	Emily Nichols	The Composting Association, Northants
	Dr Robin Szmidt	SAC, Scottish Agricultural College, Compost Technology Unit, Environment Division, Auchincruive



