

Form 2

Dioxins and Furans

**Send filled form to
UNEP Chemicals**

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<u>Country (or region)</u> Germany	<u>Contact person</u> Dr. Klaus-G. Steinhäuser
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IMPORTANT: See instructions before filling the form

SECTION 1. Have studies been undertaken to identify the major sources of dioxins/furans in your country?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Comments:

Some of the source categories were modified according to the structure of available data, which is commented in the table.

Reference:

1. Release inventory and abatement options of POP in Germany, Umweltbundesamt, Final Report 3/98
Identification of relevant industrial sources of dioxins and furans in Europe, Landesumweltamt Nordrhein-Westfalen, 1997

Date:

25.02.98

SECTION 2.
POTENTIAL OR IDENTIFIED MAJOR SOURCES OF DIOXINS AND FURANS IN YOUR COUNTRY

Sources	Quantity released per year	Relative importance Major/Minor	Alternative processes or techniques(e.g. cleaner technologies) known to you	Relative cost and effectiveness of the alternative techniques
Asphalt mixing installations	0.03 g I- Teq/a (2)	Major <input type="checkbox"/> Minor <input checked="" type="checkbox"/>	Comment: only little data are available from measurements with uncertainties.	
By-products of chlorinated substances manufacture		Major <input type="checkbox"/> Minor <input type="checkbox"/>	Comment: seems to belong to the chemical industry source	
Cable incineration		Major <input type="checkbox"/> Minor <input type="checkbox"/>	Comment: no source in Germany; no thermal cable reclamation in Germany, only mechanical methods in use.	
Chemical industry		Major <input type="checkbox"/> Minor <input checked="" type="checkbox"/>	See explanations at the bottom of this table	

Coal combustion (sum of power stations, industrial combustion and residential combustion)	14.2 g Teq/a (1)	Major <input type="checkbox"/> Minor <input checked="" type="checkbox"/>	Comment: no special reduction measures for PCDD/F are used. In residential combustion the use of waste material should be forbidden and complete combustion ensured.	
Contaminated pesticides		Major <input type="checkbox"/> Minor <input type="checkbox"/>	Comment: seems to be the same source as for pesticides	
Forest/grass fire		Major <input type="checkbox"/> Minor <input type="checkbox"/>	NA	
Fuel combustion (fuel = heating oil; sum of power stations, industrial combustion and residential combustion)	1.59 g Teq/a (1)	Major <input type="checkbox"/> Minor <input checked="" type="checkbox"/>	no special reduction measures for PCDD/F are used. In residential combustion the use of waste material should be forbidden and complete combustion ensured.	
High temperature processes		Major <input type="checkbox"/> Minor <input type="checkbox"/>		
Wastes incineration	32 g Teq/a (1)	Major <input type="checkbox"/> Minor <input checked="" type="checkbox"/>	<ul style="list-style-type: none"> • Modification of the incineration process • Flue gas emission control • Emission limit value in Germany: 0.1 ng Teq/m³ 	See enclosure (A)
Industrial processes		Major <input type="checkbox"/> Minor <input type="checkbox"/>		
Ironworks (primary iron production)	0.79 g Teq/a (1)	Major <input type="checkbox"/> Minor <input checked="" type="checkbox"/>	Dust reduction by cyclons and filters	
Landfill gas incineration	0.3 g Teq/a (1)	Major <input type="checkbox"/> Minor <input checked="" type="checkbox"/>	No flaring of landfill gas by torches without reduction measures	
Non-Fe metal industry (without consideration of the used fuel)	91.6 g Teq/a (1)	Major <input checked="" type="checkbox"/> Minor <input type="checkbox"/>	Filters with adsorption units	
Other contaminated chemicals (e.g. PCBs)		Major <input type="checkbox"/> Minor <input type="checkbox"/>	Comment: PCBs and PCP are phased out in Germany. Only small unestimated amounts from residuals in Germany	
Pesticides	0.87 g I- Teq/a (2)	Major <input type="checkbox"/> Minor <input checked="" type="checkbox"/>		
Sintering processes	168 g Teq/a (1)	Major <input checked="" type="checkbox"/> Minor <input type="checkbox"/>	Dust reduction by electric filters with charcoal additives	
Sludge incineration	< 0.1 g Teq/a (1)	Major <input type="checkbox"/> Minor <input checked="" type="checkbox"/>	<ul style="list-style-type: none"> • Modification of the incineration process • Flue gas emission control • Emission limit value in Germany: 0.1 ng Teq/m³ 	See enclosure (A)
Steel industry (without primary iron production)	4.9 g Teq/a (1)	Major <input type="checkbox"/> Minor <input checked="" type="checkbox"/>	Filters (fabric filters in most cases)	
Traffic emissions (Gasoline)	3.1 g Teq/a (1)	Major <input type="checkbox"/> Minor <input checked="" type="checkbox"/>	No use of scavengers and chlorinated additives	
Transportation (Diesel)	1.6 g Teq/a (1)	Major <input type="checkbox"/> Minor <input checked="" type="checkbox"/>		

Waste incineration (Hazardous)	2 g Teq/a (1)	Major <input type="checkbox"/> Minor <input checked="" type="checkbox"/>	<ul style="list-style-type: none"> • Modification of the incineration process • Flue gas emission control • Emission limit value in Germany: 0.1 ng Teq/m³ 	See enclosure (A)
Waste incineration (Municipal solid)	30 g Teq/a (1)	Major <input type="checkbox"/> Minor <input checked="" type="checkbox"/>	<ul style="list-style-type: none"> • Modification of the incineration process • Flue gas emission control • Emission limit value in Germany: 0.1 ng Teq/m³ 	See enclosure (A)
Waste incineration (Medical solid)	0.1 g Teq/a (1)	Major <input type="checkbox"/> Minor <input checked="" type="checkbox"/>	<ul style="list-style-type: none"> • Modification of the incineration process • Flue gas emission control • Emission limit value in Germany: 0.1 ng Teq/m³ 	See enclosure (A)
Wood combustion	2.7 g Teq/a (1)	Major <input type="checkbox"/> Minor <input checked="" type="checkbox"/>	No special reduction measures for PCDD/F are used. In residential combustion the use of waste materials should be forbidden and complete combustion should be ensured.	
Other: Crematories	2.3 g Teq/a (1)	Major <input type="checkbox"/> Minor <input checked="" type="checkbox"/>		

Comments on PCDD/F emissions from chemical industry:

PCDD/F can be emitted during the production and use of 2,4,5-trichlorophenol, PCP and PCB. According to German law, PCP and PCB are phased out. In the 1970s and 1980s, the PCDD/F emissions which resulted from the production and use of the substances mentioned above reached several kilograms. But in the 1990s the emissions have been reduced considerably. Remaining emissions from stockpiles (transformers and condensators filled with PCB, which are still in use) decrease permanently.

A further source of PCDD/F emissions is the production of chloranil based dyes with chlorophenole as an intermediate. No PCDD/F emissions are occurring when the hydrochinone route (which is used in Germany) is followed during production. PCDD/F emissions from the production of vinyl chloride are estimated to reach about 76.5 mg Teq/a (1).

Because of the fact that the production of the most critical products is prohibited in Germany, PCDD/F emissions from chemical industry are negligible. In production processes, where PCDD/F may be formed, waste gases and production residues usually are treated in special incineration units before being released. Flue gas concentrations measured in the afterburners have been found to be well below 0.1 ng Teq/m³.

Data Sources:

- (1). Release inventory and abatement options of POP in Germany, Umweltbundesamt, Final Report 3/98 (base year: 1994)
- (2). Identificaiton of relevant industrial sources of dioxins and furans in Europe, Landesumweltamt Nordrhein-Westfalen, 1997
- (3). Enclosure A: Persistente Organische Schadstoffe in Deutschland, p75-6

SECTION 3. RELEASE MONITORING

	Monitoring type	Short description(add separate page if needed)
3.1	Ambient air Yes <input type="checkbox"/> No <input type="checkbox"/>	
3.2	Ground water Yes <input type="checkbox"/> No <input type="checkbox"/>	
3.3	Surface water Yes <input type="checkbox"/> No <input type="checkbox"/>	
3.4	Point air Yes <input type="checkbox"/> No <input type="checkbox"/>	
3.5	Point water Yes <input type="checkbox"/> No <input type="checkbox"/>	

3.6	Soil Yes <input type="checkbox"/> No <input type="checkbox"/>	
3.7	Ecosystem Yes <input type="checkbox"/> No <input type="checkbox"/>	
3.8	Human Yes <input type="checkbox"/> No <input type="checkbox"/>	
3.9	Agricultural commodity Yes <input type="checkbox"/> No <input type="checkbox"/>	
3.10	Food products Yes <input type="checkbox"/> No <input type="checkbox"/>	

SECTION 4. REGULATORY ACTIONS TAKEN TO CONTROL THE USE OF THE POP

	Action type to control the manufacture, importation, distribution in commerce, use or disposal	Short description (add separate page if needed)	Reference
4.1	Public health standards or regulations <input type="checkbox"/>		
4.2	Occupational standards or regulations <input type="checkbox"/>		
4.3	Environmental standards or regulations <input type="checkbox"/>		
4.4	Guidance Document <input type="checkbox"/>		
4.5	Voluntary programme <input type="checkbox"/>		
4.6	Other (e.g., Governmental order) <input type="checkbox"/>		
4.7	No action <input type="checkbox"/>		