SNAP CODE: **091003**

SOURCE ACTIVITY TITLE: **OTHER WASTE TREATMENT** ***Sludge Spreading***

NOSE CODE: **109.07.04**

NFR CODE: **6 D**

1 ACTIVITIES INCLUDED

Emissions from the spreading of sewage sludge can be considered as a part of a wastewater treatment plant.

2 CONTRIBUTION TO TOTAL EMISSIONS

Table 2.1: Contribution to total emissions of the CORINAIR90 inventory (*28 countries*)

Source-activity	SNAP-code*	Contribution to total emissions [%]							
		SO_2	NO_x	NMVOC	CH_4	CO	CO_2	N_2O	NH_3
Sludge Spreading	091003	-	-	0.1	0.3	-	-	-	0.1

* = SNAP90 code 090300
0 = emissions are reported, but the exact value is below the rounding limit (0.1 per cent)
- = no emissions are reported

Table 2.2: Contribution to total particulate matter emissions from 2004 EMEP database (WEBDAB)†

NFR Sector	Data	PM_{10}	$PM_{2.5}$	TSP
6 D - Other, Waste	No. of countries reporting	8	6	9
	Lowest Value	0.0%	0.0%	0.0%
	Typical Contribution	0.5%	0.9%	0.2%
	Highest Value	1.3%	2.7%	0.9%

†These activities are not believed to be a significant source of $PM_{2.5}$ for the majority of countries. Data reported for 2004, however, indicates that it may be significant for in some cases. See relevant chapter B111 supplementary chapter for PM emission factors.

3 GENERAL

3.1 Description

The sludge produced in a wastewater treatment plant is either burned, mechanically dried or dried by spreading in the open air. Information on emissions from the latter process is scarce. Emissions to air include odours. Recent measurements indicate that some ammonia is also produced. These emissions are considered in this chapter.

In the Netherlands some information on the composition of communal sludge is available. Some of the pollutants, especially halogenated hydrocarbons and PAHs might also become airborne on spreading.

4 SIMPLER METHODOLOGY

The simpler methodology would be to multiply the activity level by the ammonia emission factor to get the ammonia emission.

5 DETAILED METHODOLOGY

6 RELEVANT ACTIVITY STATISTICS

Standard statistics on sludge production and the fraction that is dried by spreading.

7 POINT SOURCE CRITERIA

This activity should be considered as an area source.

8 EMISSION FACTORS, QUALITY CODES AND REFERENCES

The amount of ammonia produced by sludge spreading is determined by the dry matter content of the sludge and the total amount of ammoniacal nitrogen present. The dry matter content of a communal sludge may be between 4% (digested) and 5% (undigested).

Recent results from the United Kingdom gave a percentage ammonia of about 5% of the total ammonia-nitrogen content of the sludge.

9 SPECIES PROFILES

10 UNCERTAINTY ESTIMATES

11 WEAKEST ASPECTS/PRIORITY AREAS FOR IMPROVEMENT IN CURRENT METHODOLOGY

12 SPATIAL DISAGGREGATION CRITERIA FOR AREA SOURCES

13 TEMPORAL DISAGGREGATION CRITERIA

Emissions from sludge spreading can be regarded as continuous.

14 ADDITIONAL COMMENTS

15 SUPPLEMENTARY DOCUMENTS

NVA Slibcommissie 1994
Slibwijzer (in Dutch)

16 VERIFICATION PROCEDURES

17 REFERENCES

Webb, J., ADA Food, Farming, Land and Leisure, personal communication, 1995.

Sommer, S.G., Olesen, J.E., Journal of environmental quality Vol. 20 (1991), pp. 679-683 Waste management. Effect of dry matter content and temperature on ammonia loss from surface applied cattle slurry.

18 BIBLIOGRAPHY

19 RELEASE VERSION, DATE AND SOURCE

Version : 1

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Source : P.F.J. van der Most
TNO
The Netherlands

Updated with particulate matter details by:
Mike Woodfield
AEA Technology
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June 2006

20 POINT OF ENQUIRY

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