SNAP CODE: **040204**

SOURCE ACTIVITY TITLE: **PROCESSES IN IRON & STEEL INDUSTRIES & COLLIERIES**
Solid Smokeless Fuel

NOSE CODE: **105.12.04**

NFR: **1 B 1 b**

1 ACTIVITIES INCLUDED

This chapter includes information on atmospheric emissions during coal carbonisation for the production of solid smokeless fuel. This type of fuel has been used for very long time by householders in open fire grates (Parker, 1978).

2 CONTRIBUTIONS TO TOTAL EMISSIONS

Very limited information is available on to what extent emissions from the production of solid smokeless fuel contribute to the contamination of the air. It is expected that these emissions include sulphur and nitrogen oxides, VOCs, and volatile heavy metals and persistent organic compounds from coal. Coal carbonisation plant can be an important source of air contamination on a local scale.

Table 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	PM*
Solid Smokeless Fuel	040204	-	-	0	0	-	-	-	-	-

0 = emissions are reported, but the exact value is below the rounding limit (0.1 per cent)
- = no emissions are reported
* = PM (inclusive of TSP, PM_{10} and $PM_{2.5}$) is <0.1% of total PM emissions

3 GENERAL

3.1 Description

Coal carbonisation to produce solid smokeless fuel occurs at high temperatures reaching 1000° C. There are three methods of coal carbonisation which differ considerably from each other. In the first method, the coal is carbonised in tubular iron retorts heated externally by the gas produced. In the second, the coal is in a large chamber and is heated by direct contact with the products of combustion of the gas made. In both cases the product reactive coke is screened to obtain sizes suitable for the open fire and for closed stoves. In the third method, the coal is carbonised by fluidization with hot gas from combustion of the coal gas made, and the relatively small particles are pressed to form briquettes (Parker, 1978).

There are also systems for making solid smokeless fuel in which only certain types of coal, for example anthracite duff, are briquetted with pitch at a suitable temperature and then carbonised.

3.2 Definitions

Solid smokeless fuel - a product of coal carbonisation.

3.3 Controls

Modern coal carbonisation plants are equipped with electrostatic precipitators that remove at least 98 % of the particulate matter from exhaust gases.

4 SIMPLER METHODOLOGY

The application of emission factors with appropriate activity statistics can be regarded as a simple methodology for estimation of emissions during coal carbonisation. However, it should be noted that the chemical composition of coal used for carbonisation is one of the most important factors affecting the amount of these emissions.

N.B There are no emission factors available for $PM_{2.5}$. The source is <0.1% of the total PM emissions for most countries.

5 DETAILED METHODOLOGY

Should a key source analysis indicate this to be a major source of particulate matter (TSP, PM_{10} or $PM_{2.5}$) then installation level data should be collected using a measurement protocol such as that illustrated in Measurement Protocol Annex.

6 RELEVANT ACTIVITY STATISTICS

No information is available from the international statistical yearbooks on the quantities of coal carbonised. It is expected that this information can be obtained directly from a given coal carbonisation plant.

7 POINT SOURCE CRITERIA

Coal carbonisation plants should be regarded as point sources if plant specific data are available.

8 EMISSION FACTORS, QUALITY CODES AND REFERENCES

No information was found on the emission factors for coal carbonisation to produce solid smokeless fuel. However, Parker (1978) indicates that the waste gases from heating a range of retorts carbonising 1000 tonnes of coal per day would contain a quantity of sulphur dioxide of about 2.5 tonnes per day. Thus, the uncontrolled sulphur dioxide emission factor of 2.5 kg/tonne coal carbonised can be obtained on the basis of the above information.

9 SPECIES PROFILES

10 CURRENT UNCERTAINTY ESTIMATES

11 WEAKEST ASPECTS/ PRIORITY AREAS FOR IMPROVEMENT IN CURRENT METHODOLOGY

Development of emission factors is necessary in order to obtain information needed for the estimation of emissions of various air pollutants during coal carbonisation.

12 SPATIAL DISAGGREGATION CRITERIA FOR AREA SOURCES

13 TEMPORAL DISAGGREGATION CRITERIA

The production process in a coal carbonisation plant is continuous.

14 ADDITIONAL COMMENTS

15 SUPPLEMENTARY DOCUMENTS

Parker A. (1978) Coal carbonisation for production of solid smokeless fuel, gas and by products. In: Industrial Air Pollution Handbook, A. Parker (ed.), Mc Graw-Hill Book Comp. Ltd., London.

16 VERIFICATION PROCEDURES

At present no specific verification procedures are available for estimation of atmospheric emissions from a coal carbonisation plant.

17 REFERENCES

Parker A. (1978) Coal carbonisation for production of solid smokeless fuel, gas and by products. In: Industrial Air Pollution Handbook, A. Parker (ed.), Mc Graw-Hill Book Comp. Ltd., London.

18 BIBLIOGRAPHY

19 RELEASE VERSION, DATE AND SOURCE

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20 POINT OF ENQUIRY

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