

Emission during coal gasification

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Executive summary

Health Council of the Netherlands



At request of the Minister of Social Affairs and Employment, the Health Council of the Netherlands assessed whether the emission, which is formed during coal gasification may induce genotoxic effects and may cause cancer, and on this basis, submitted a proposal for a classification. The advice is made by the Subcommittee on Classifying carcinogenic substances of the Dutch Expert Committee on Occupational Safety. On www.healthcouncil.nl, information can be found on the tasks of the Subcommittee. The membership of the Subcommittee is given on the last page of this advisory report.

Coal gasification

Coal gasification is a process in which lignite and black coal is turned into combustible gas under high temperatures and pressure. The syngas or synthesis gas is used as fuel for electricity generation, and as intermediate in manufacturing chemicals, such as chemical fertilizers. Workers who are involved in coal gasification, can be exposed to the emission,

which is formed during coal gasification. The emission exists of a mixture of substances, for instance as a result of incomplete combustion (e.g., coal tar). In the present advisory report, the evaluation accounts for the emission as a whole. Individual substances that can be found in the emission of coal gasification are not considered.

Assessment of the genotoxicity and carcinogenicity

Based on the available scientific literature, the Committee assesses the potential genotoxic and carcinogenic properties of the substance or process in question. The Subcommittee recommends classifying the substance or process in two hazard categories, which represent the grade of evidence for mutagenicity in germ cells (a measure for genotoxicity), and for carcinogenicity. The categories are based on the hazard categories set by the European Commission (EU-guideline (EG) 1272/2008).

The Committee is of the opinion that there is sufficient evidence of an association between occupational exposure to the emission, which is formed during coal gasification and increased cancer mortality, in particular lung cancer mortality. In addition, support for the carcinogenic properties comes from animal experiments in which animals were chronically exposed to coal gasification samples.

Recommendation

Based on limited evidence, the Committee recommends classifying the emission, which is formed during gasification, as a germ cell mutagen in category 2 (*“concern for humans owing to the possibility that it may induce heritable mutations in the germ cells of humans”*).

Furthermore, the Committee recommends classifying the emission, which is formed during coal gasification, in category 1A (*“known to be carcinogenic to humans”*). The carcinogenicity is caused by a stochastic genotoxic mechanism.



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The Health Council receives most requests for advice from the Ministers of Health, Welfare and Sport, Infrastructure and Water Management, Social Affairs and Employment, and Agriculture, Nature and Food Quality. The Council can publish advisory reports on its own initiative. It usually does this in order to ask attention for developments or trends that are thought to be relevant to government policy.

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