

Focus on IFA's work

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GHS column model for the assessment of hazardous substances

Problem

Before using a chemical product within his company, any German employer is required under the Ordinance on Hazardous Substances (GefStoffV) to assess whether it is a hazardous substance, what hazards if any it presents, and whether a less hazardous substitute can be used.

This assessment of the hazardous substance requires knowledge of chemistry and of hazardous substance regulations which many companies do not possess. Guides are therefore needed which enable the companies to make informed decisions concerning substitute substances.

Activities

Safety data sheets contain all the information required for assessment of the hazards presented by chemical products. Employers, whose knowledge of hazardous substances is often limited, have the task of evaluating this information correctly. In order to support the employer, the IFA has developed a simple table, the "column model".

The diagram shows the principle of the column model with example entries. The complete table can be found on the IFA's website or ordered in printed form free of charge.

Hazard	Acute health hazards	Chronic health hazards	Environmental hazards	Physical and chemical hazards	Hazards presented by emissions behaviour	Hazards presented by processes
Very high	Acute tox. 1 and 2	Carcinogenic, mutagenic	Acute aquat. tox 1 German water hazard class 3	Flammable liquids 1	Gases, dusts, aerosols	Open
High	Acute tox. 3 Organ tox. single 1 Sensitizing	Reprotox. Organ tox. repeatd 1	Chron. aquat. tox 1 and 2	Flammable liquids 2	Vapour pressure 50-250 hPa	Partially open
Medium	Acute tox. 4 Organ tox. single 2 Caustic	Organ tox. repeatd 2	Chron. aquat. tox 3 Water hazard class 2	Flammable liquids 3	Vapour pressure 10-50 hPa	Closed
Low	Irritant	Otherwise chronically harmful	Chron. aquat. tox 4 Water hazard class 1	Poorly flammable	Vapour pressure 2-10 hPa	Sealed
Negligible	Safe		No hazard presented to water	Ignition point > 100 °C	Non-dust-forming solids	

Principle of the GHS column model, with example entries

Results and Application

With the aid of the column model table, the information available from safety data sheets, such as hazard phrases, German water hazard classes, flammability behaviour, volatility, etc. can be classified with regard to the hazard it presents. A product and a possible substitute are evaluated and compared separately in the five columns:

- Acute and chronic health hazards
- Environmental hazards
- Physical and chemical hazards
- Emissions-related hazards
- Process-related hazards

Should the potential substitute perform better than the product currently in use in all five columns, the choice of substitute is clear. A more likely scenario is however that the potential substitute will perform better in some columns but worse in one or two of them. The user then has the task of assessing which properties, and therefore which columns, he considers to be most important.

Area of Application

Manufacturers' associations and other institutions seeking to develop sectoral solutions, companies/employers, OSH professionals, occupational physicians, prevention consultants

Additional Information

- Smola, T.: [The GHS Column Model](#) 2017. Leaflet. Published by: Institut für Arbeitsschutz der Deutschen Gesetzlichen Unfallversicherung (IFA), Sankt Augustin 2017

Expert Assistance

IFA, Division 1: Information technology – Risk management

Literature Requests

IFA, Central Division