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COMMITTEE OF EXPERTS ON THE TRANSPORT OF DANGEROUS GOODS AND ON THE GLOBALLY HARMONIZED SYSTEM OF CLASSIFICATION AND LABELLING OF CHEMICALS

Sub-Committee of Experts on the Globally Harmonized System of Classification and Labelling of Chemicals

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UPDATING OF THE GLOBALLY HAMONIZED SYSTEM OF CLASSIFICATION AND LABELLING OF CHEMICALS (GHS)

Health hazards

Status report on carcinogenicity potency estimation methods

Transmitted by the Organization for Economic Co-operation and Development (OECD)

1. Many substances have been identified as carcinogens from rodent bioassays and classified according to the strength and weight of this evidence. In general, no specific considerations are given to the carcinogenic potency of the substance. Also, the GHS criteria for classification of mixtures containing carcinogens do not reflect the potency of a carcinogen in a mixture or the preparation as such. This general classification system for carcinogenic mixtures does not take into account the wide range of carcinogenic potency that can be observed both in human epidemiological studies and in animal experiments (Allen et al., 1988; Gold et al., 1989). Several methods have been developed to estimate carcinogenic potency for use for varied purposes. The listing provided below may be representative of these methods, which will be further investigated for strengths and weaknesses. The use of these methods requires expert judgement and experience in the use and interpretation of the potency estimate. It may be possible, based on some methods for potency estimation, to derive specific concentration limits for certain carcinogenic mixtures (GHS Section 1.3.3.2).

2. Accurate and reliable potency estimates based upon human data have preference above those based on animal data. However, as reported by Allen and colleagues (Allen et al., 1988), there are several difficulties in evaluating human data, such as e.g. establishing reliable quantitative estimates of human exposure doses and differentiation of problems associated with mixed exposures. Therefore, in most cases, human data are unlikely to be helpful in spite of the obvious species relevance. There are several approaches available for determining potency of carcinogens or dose descriptors from animal data. Ideally, mechanistic data would be available to support the application of a chemical-specific biologically-based model. In the absence of such data, several potency estimation methods have been developed: ‘TD50’, ‘TI’, ‘TDx’, ‘T25’, ‘LED10/ED10’, Slope factor/unit risk’.

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