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Generic Assessment Criteria for Human Health Risk Assessment



LQM/CIEH Generic Assessment Criteria for Human Health Risk Assessment

Frequently Asked Questions

Last updated: 17 July 2007 (answers are added at the top of the file)

Copies of the LQM CIEH GAC publication may be ordered from www.lqm.co.uk

<p>7 Why do some GAC appear to decrease with increasing Soil Organic Matter (SOM) (e.g. some of the heavier TPH fractions)?</p>	<p>Readers of the publication should be aware that the CLEA-UK Beta version 1.0 model used to generate the GAC is a pseudo-probabilistic model and consequently the model outputs may vary between separate model runs even when the same substance is being modelled. Therefore, variations in GACs for the same substance would be expected within the 'noise' arising from having a number of parameters (such as bodyweight) varying probabilistically. Further information on the probabilistic nature of the CLEA-UK Beta version 1.0 model is contained within the CLEA FAQ (November 2006) and CLR 10.</p> <p>As stated within Section 10.3.2 the soil-to-plant concentration factor (CFroot) varies according to SOM, although a conservative value for CFroot (at 1% SOM, see Table 10-8) has been used to derive the GAC published.</p> <p>The above two factors independently and combined will cause some of the TPH fractions to vary in the way described in the question for the range of land-use scenarios reported within the GAC publication.</p>
<p>6 What are the Assessment Sub-Criterion (ASCI)?</p>	<p>The Assessment Sub-Criterion (ASCI) presented for each pathway within the contaminant specific tables within the publication should be used with caution to understand the relative importance of different exposure pathways and to inform decisions about whether and what form of Detailed Quantitative Risk Assessment may be appropriate. They provide an indication of the relative importance of each pathway's contribution based upon the Average Daily Exposure (ADEi) for each pathway reported within the CLEA-UK output for the specific land-use scenario under consideration. The methodology for this is provided within Section 1.7 of the LQM CIEH GAC publication.</p> <p>Should only a single pathway be under consideration for a given exposure scenario, for example, then the user of the publication should satisfy themselves of the suitability of the published ASCi for use within a generic or site-specific risk assessment by calculating an assessment criterion by running a suitable model, such as CLEA UK, with only that pathway operating.</p>

	<p>Please note the definition of ASC provided in this publication is different to that provided in the SNIFFER Method for Deriving Site-Specific Human Health Assessment Criteria for Contaminants in Soil.</p>
<p>5 Was the dust enrichment factor applied when deriving the GAC for the petroleum hydrocarbon fractions?</p>	<p>The dust enrichment factor was applied to all of the TPH fractions and the omission of the paragraph in the report stating this was an oversight on our part. The GAC are intended for use as screening values therefore the more conservative option of application of the dust enrichment factor was selected.</p> <p>The dust enrichment factor is applied to account for the fact that the contamination is more likely to adhere to the finer soil particles i.e. those more likely to be inhaled or stick to the skin and the consideration of its application needs to take account of the soil type and the contaminant properties. The dust enrichment factors for the different standard soil types are given in CLEA Briefing Note 2. The importance of the application of the dust enrichment factor on the assessment criteria derived will be influenced by the importance of the dust and dermal exposure pathways relative to any others being considered.</p> <p>The dust enrichment factor was applied to the poly aromatic hydrocarbons and not applied to the chlorinated solvents in accordance with the guidance in the Environment Agency fate and transport report (draft technical report P5-079/TR1).</p>
<p>4 Do the GAC for petroleum hydrocarbons consider non-threshold effects?</p>	<p>The GAC for the petroleum hydrocarbon fractions deal only with threshold effects and in accordance with the approach adopted by the TPH Criteria Working Group we have used the toxicological data for toluene for the aromatic EC5-EC7 fraction. The physico-chemical data for benzene has been used for the aromatic EC5-7 fraction and that for toluene used for the aromatic EC7-8 fraction.</p> <p>On a site specific basis it may be necessary to consider the non-threshold effects for individual substances.</p>
<p>3 Can you provide the GAC in a tabulated format?</p>	<p>No, we will not provide a tabulated version of the GAC. We believe it is essential that the risk assessor is familiar with the basis of the GAC they are using given the site specific context they are using them in. Therefore it is inappropriate to have a generic summary table of the values.</p>
<p>2 The CLEA UK software gives error messages when running zinc?</p>	<p>If only one TDI is entered into the chemical database, and the MDI is equal or greater than 80% of the TDI for one or more of the default age classes, the software will not be able to run a simulation and several error boxes will appear during the simulation run. There is work around which will not affect the output in the "CLEA UK Software V1.3 Known Issues (November 2006)" document available on the Environment Agency website.</p>

1 What form of Henry's Law Constant has been used?	As stated in the Introduction chapter the Henry's Law Constant has been input in its dimensioned form for all relevant organic contaminants.
0 What are the origins of the LQM CIEH Generic Assessment Criteria?	<p>The LQM CIEH GAC values for 31 substances together with the underlying basis for their derivation including the fate and transport and toxicity input values were published as a book in December 2006. Since then, well over 400 copies have been sold to consultants and regulators throughout the UK. Their publication is assisting the wider contaminated land community better fulfill their roles and responsibilities in the day-to-day work of risk based management of land contamination.</p> <p>CIEH President, Alan Higgins, explained that the purpose of the GAC values was to restore confidence and fill the "SGV gap" as authoritatively as possible. He went on to say "We believe they will quickly gain currency as the 'numbers of choice' among local authorities and developers alike. Employed properly, they will play a welcome role in the risk assessment processes which are at the heart of the regulation of land contamination and necessary for public peace of mind."</p> <p>The LQM CIEH generic assessment criteria were derived using the DEFRA and Environment Agency CLEA UK beta model released in November 2005. The Agency recommend CLEA UK beta be used for risk assessment purposes and intended it to be used by practitioners to derive generic assessment criteria. LQM staff reviewed the literature on fate, transport and toxicity properties for the contaminants for which generic assessment criteria values have been developed. This review was informed by the reviews carried out by workshop delegates. A clear hierarchy of source documents was followed:</p> <ol style="list-style-type: none"> a. draw on DEFRA/ Environment Agency documents b. draw on other UK government/ state organisation documents c. draw on European institution documents d. draw on International organisation documents e. draw on other national (European and non European) documents f. draw on compilations g. draw on primary literature <p>The LQM CIEH GAC are designed to indicate the maximum level of contaminants in soil at which there is no evidence of possible harm to the health of a typical female child in the first six years of life. The LQM CIEH values are broadly equivalent to the Soil Guideline Values published by DEFRA and the Environment Agency between 2002 and 2004. They do not have the status of SGVs simple by reason of their origin. They will be redundant if and when DEFRA and the Environment Agency publish a soil guideline value for a substance.</p> <p>Non exceedance of a relevant LQM CIEH value indicates that the soil contaminant levels are such as not to compromise human health. Exceedance of a relevant LQM CIEH value does not constitute evidence</p>

of a significant possibility of significant harm. Rather such exceedance should trigger a further detailed quantitative risk assessment where site specific parameters are used to derive site specific assessment criteria. Of course common sense tells us that a gross exceedance is a good indicator that an unacceptable risk is present.

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