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Distribution List

ENVIRONMENTAL CONCERN OF
HEXACHLOROETHANE (HC) SMOKES

- Refs: A. 1267-6 (DGRD Ops Co-ord) 21 Oct 1992
B. USA-CERL TR N-87/26 Sept 1987 (A revised health risk assessment for the use of HC smoke on an Army training area)
C. USA-CERL TR N-87/17 June 1987 (Quantification of HC munitions and associated chemical loads)

1. As requested at reference A, the documents at references B and C have been examined for applicability to the CF and DND.
2. Based on an extensive literature survey, reference B identifies the compounds released by HC smokes and quantifies health risks associated with their use. Using various training scenarios, this document identifies a more than acceptable cancer risk level for the user and civilian populations living in proximity to the training areas, and recommends mitigating actions that should be taken.
3. Reference C documents the extent to which HC smokes were used on US Army installations and by the National Guard between 1981 and 1984.
4. The risks to which Canadian soldiers or civilian populations can be exposed in Canada can not be established using the data contained in these reports. The methodology employed in ref. B however could be of some help for a similar study in Canada, to evaluate the risks of using HC or other smokes as well. Such a study, however, would require a considerable amount of data; quantification of the munitions used; definition of the scenarios in which the smokes are used; attitude of the military personnel during employment of smoke; frequency and duration of exposures; and the use of safe practices.
5. The comments that should be made are more about the use of HC smoke than about the reference documents. The toxicity of HC smoke has been demonstrated and the dangerous

components contained in its combustion products are well known as well as the health risks associated with their inhalation. However this is more widely known in the scientific community than by the users. Reference B is particularly instructive on this point:

"Interviews were conducted with six chemical officers (references will remain anonymous) who were trained and in charge of smoke deployment training, and with six other officers and enlisted personnel on smoke generating squads who had participated in smoke training after FY78. The opinion of those interviewed was that relatively few soldiers mask in the presence of HC smoke unless it is intense enough to create and reverse symptoms or unless a chemical attack is being simulated. Establishment of this general perception was critical in determining if the study should continue since calculations showed that, with properly sized M3-A3 masks, the chronic absorbed dose from HC smoke exposure would likely be insignificant."

6. From recent observations, I must say that the attitude vis-à-vis smokes in the CF is not very different from what is reported in this document. Personnel would likely wear masks during exercises simulating chemical or biological attacks and this is because the use of masks is part of the scenario rather than a protective measure against the smoke actually disseminated during the exercise. A recent communication with a high ranking officer also indicates that many users are not aware of the potentially severe health risks associated with HC smokes.

7. Most of the conclusions in reference B are applicable to the CF and DND. Several measures are recommended to reduce the risk:

"Requirement for use of proper fitting masks in the presence of HC and other smokes; rotation of cadre personnel to reduce cumulative exposure; use of nontoxic smokes for training exercises except when HC smoke is absolutely required; change of the HC smoke to remove the offending compounds, if possible. Moreover, since HC smoke is the most toxic of the several smokes available, it should not be used in training where other smokes would be equally effective."

8. Military personnel should be made aware of the health risks associated with HC and other smokes; safe practices should be encouraged; personnel should be taught to stand upwind of activated smoke pots whenever possible;

the use of masks should be enforced in the presence of smoke and particularly when personnel are surrounded by smoke or simply downwind.

9. Although HC smoke is the most toxic and special attention should be given to its use, the risks associated with all other smokes should not be minimized and the above comments and recommendations should be applied in the presence of all types of smokes, be it coloured, WP, RP or even those considered to have a low toxicity.

10. Finally the above underlines the need to continue supporting R&D work for the development of low toxicity smokes.

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Enclosure

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