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File: 541.460.000n
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THE MEMPHIS DEPOT
TENNESSEE

ADMINISTRATIVE RECORD
COVER SHEET

AR File Number 652

File: 541.460.000.e
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW
ATLANTA, GEORGIA 30303-3104

August 23, 2001

4WD-FFB

John Deback
BRAC Environmental Coordinator
Defense Distribution Center Memphis
2163 Airways Blvd.
Memphis, TN 38114 - 5210

SUBJECT Addition to the Administrative Record for the Main Installation ROD

Dear Mr Deback

Please add the enclosed memo to the administrative record (AR) This documents supports the requirement in the Main Installation Record of Decision (ROD) to monitor land use controls on an annual basis As such it is an integral part of the decision-making process and must be located in the AR.

If you have any questions please call me at 404/562-8553

Sincerely yours,

Wm Turpin Ballard, RPM
Federal Facilities Branch

Enclosure

cc Jim Morrison, TDEC/Memphis
File

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4

61 Forsyth Street
Atlanta, Georgia 30303-3104

March 13, 2001

4WD-OTS

MEMORANDUM

SUBJECT: Evaluation of less than lifetime risk for scheduling of land use control monitoring at Functional Unit 1 (FU-1)
The Memphis Depot, Memphis, TN

FROM: Ted W. Simon, PhD, DABT
Toxicologist
Office of Technical Services

TO: William Turpin Ballard
RPM, FFB

CC: Elmer W. Akin,
Chief, OTS

Per your request, I have evaluated the risk involved with shorter exposure durations than used in the risk assessment. The purpose of this evaluation is to determine how often land use controls should be reviewed.

Summary

For a 5 year exposure duration (ED), the incremental lifetime cancer risk due to contact with surface soil to a child, 1 to 6 years old, in a residential exposure scenario is 5E-04. Because EPA's risk assessment process assumes that the dose leading to cancer increases linearly with time, the ED at the upper end of the acceptable risk range will be 1 year.

☞ *Land use controls should be reviewed every year at Functional Unit 1 at the Memphis Depot.*

Adult cancer risk and both adult and child noncancer hazards were below levels of concern considering a 5 year ED. The discussion below considers only the incremental cancer risk to a child in a residential exposure scenario for a 5 year ED.

Exposure Units and Exposure Point Concentrations

In the baseline risk assessment for FU-1, the concentrations at the sampling location producing the greatest calculated risk were used to represent the EPCs in the residential exposure unit in FU-1 that posed the greatest risk. Therefore, the concentrations at this single sampling location, SS-65, were used to represent an entire residential EU, presumably, 0.5 acres in size.

There is, of course, uncertainty about the possible future location of any residential EU in FU-1and uncertainty about the actual average concentrations in this EU. Use of the concentrations at location SS-65 produced an incremental lifetime cancer risk for a child of 5E-04 for a 5 year ED.

EPCs calculated for the worker with an EU consisting of the entire area of FU-1 were also used to calculate risk. The assumption behind using these worker EPCs was to estimate risk the might be applicable to areas in FU-1 other than SS-65. The incremental cancer risk to the residential child calculated with these FU-wide EPCS was also 5E-04. Of course, there is uncertainty in using these FU-wide EPCs to represent a smaller area.

Determination of the Exposure Duration at a Target Risk Level

The standard equation for risk can be rearranged to yield a value for ED if a target risk level is chosen. For example, the risk equation for incidental ingestion of soil is:

$$Risk = CSF \frac{C\ IR\ EF\ ED}{BW\ AT} \quad (1)$$

Solving this equation for ED gives:

$$ED = \frac{Risk\ Target\ \ BW\ \ AT}{C\ IR\ EF} \quad (2)$$

Eq. 1 may be solved iteratively, substituting progressively lower values of ED until the calculated risk is acceptable. Alternatively, Eq. 2 may be solved directly for ED once a target risk has been chosen.

Please let me know if you need further help.

T.W. Simon/tws:4WD-OTS:28642/03/13/1/A:\DISK11\MAR01\ED-DEPOT.WPD

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ADMINISTRATIVE RECORD

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