

to the comparison value is greater than 100. A moderate rating is given when the ratios are greater than 2 but less than 100. A minimal rating is assigned when

the ratios are less than 2. The framework uses available site information to evaluate three media of concern:

groundwater, surface water and sediment, and surface soils.

The calculation is shown in Figure 2.

<u>Contaminants</u>		<u>Calculation*****</u>	<u>Rating</u>
Carcinogen A:	[A]*max	$\frac{[A]^*_{\max}}{\text{Std}^{**}} + \frac{[B]_{\max}}{\text{Std}^{**}} + \frac{[C]_{\max}}{\text{Std}^{***}} = X_1$	<div>&gt;100 = <u>Significant CHF</u></div> <div>2-100 = <u>Moderate CHF</u></div> <div>&lt;2 = <u>Minimal CHF</u></div>
Carcinogen B:	[B]max		
Non-carcinogen C:	[C]max		
Ecological D:	[D]max	$\frac{[D]_{\max}}{\text{Std}^{****}} = X_2$	
<div>[A]* - Maximum concentration in medium</div> <div>Std** - Comparison value based on 10<sup>-4</sup> human cancer incidence</div> <div>Std*** - Comparison value based on reference dose for humans</div> <div>Std**** - Comparison value for ecological receptors where available</div> <div>*****Use comparison values in Appendix B</div>			
<div>Note: Contaminants posing a threat to ecological receptors (i.e., ecological contaminants) must be evaluated separately from those posing a threat to human receptors</div>			

**Figure 2: Contaminant Hazard Factor Calculation**

The comparison values used for this evaluation are provided in the Relative Risk Site Evaluation Primer (Summer 1997, Revised Edition), which can be referenced through the World Wide Web in the publications sections at <http://www.dtic.mil/envirodod>. DoD will update these values on an as needed basis to reflect the latest information available from sources such as the Integrated Risk Information System (IRIS) maintained by the EPA or the EPA Region IX Preliminary Remediation Goals (PRGs).

#### (2) Migration Pathway Factor

The MPF represents the likelihood of transport of contaminants through groundwater, surface water and sediment, and soil. The MPF is determined by matching available site information on pathways with the corresponding definitions about the likelihood of contaminant migration. The MPF is rated evident, potential, or confined according to the following definitions about the likelihood of contaminant migration for each environmental medium:

##### (a) Groundwater

- *Evident*—Analytical data or observable evidence indicates that contamination in the groundwater is moving or has moved away from the source area.
- *Potential*—Contamination in the groundwater has moved only slightly

beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.

- *Confined*—Information indicates that the potential for contaminant migration from the source via the groundwater is limited (due to geological structures or physical controls).

##### (a) Surface Water and Sediment

- *Evident*—Analytical data or observable evidence indicates that contamination in surface water and/or sediment is present at, moving toward, or has moved to a point of exposure.

- *Potential*—Contamination in surface water or sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.

- *Confined*—Information indicates a low potential for contaminant migration from the surface water or sediment source to a potential point of exposure (could be due to presence of geological structures or physical controls).

##### (c) Soils

- *Evident*—Analytical data or observable evidence that contamination in the soil is present at, is moving toward, or has moved to a point of exposure.

- *Potential*—Contamination in the soil has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.

- *Confined*—Information indicates a low possibility for contamination to be present at or migrate to a point of exposure.

#### (3) Receptor Factor

Information about the present or future likelihood of receptors for each MRS is summarized as the Receptor Factor (RF). RF of identified, potential, or limited are determined by analysis of available information on receptors at MRS. Human and ecological receptors (i.e., endpoints for exposure) to be considered are as follows:

##### (a) Groundwater

Human receptors include those individuals that may be exposed to groundwater contamination via onsite and down gradient water supply wells used for human consumption or in food production. Groundwater is classified using the EPA's *Guidelines for Groundwater Classification Under the EPA Groundwater Protection Strategy*, Office of Groundwater Protection, 1986. Ecological receptors are not evaluated.

##### (b) Surface Water and Sediment

These two media are discussed together since they potentially affect the same receptors. Human receptors for