

a new cancer potency factor (q1\*) for 1,3-dichloropropene and vinyl chloride, and a new reference dose (RfD) for 1,1-dichloroethylene, hexachlorocyclopentadiene, and lindane. These values were already published in the Agency's Integrated Risk Information System (IRIS). Both an RfD and q1\* are available in IRIS for 1,3-dichloropropene and vinyl chloride. Because it resulted in more protective criteria, EPA used the q1\* to derive the criteria in these cases rather than the RfD.

We derived the water quality criteria presented here with bioconcentration factors (BCFs) or field-measured bioaccumulation factors (BAFs) based on the 1980 Methodology. These values are consistent with those used to promulgate human health water quality criteria for priority toxic pollutants in rules such as the 1992 National Toxics Rule and the 2000 California Toxics Rule.

#### *B. What Are EPA's Responses to the Scientific Views Received on the Criteria Revisions?*

This section summarizes the scientific views received in response to the December 27, 2002, **Federal Register** Notice. It also presents EPA's responses to the scientific views.

##### 1. 2000 Human Health Methodology

a. Support application of EPA's new methodology for deriving human health water quality criteria.

*Scientific View*—One submitter expressed support of EPA's application of the new human health methodology, including using more current estimates of daily fish intake, relative source contribution (for noncarcinogenic effects), and updated toxicological data.

*Response*—EPA acknowledges and appreciates the submitter's support.

b. Incidental ingestion should be considered when deriving human health water quality criteria for toxic pollutants with a low BCF.

*Scientific View*—One submitter indicated that EPA should consider acute and chronic effects from incidental ingestion of water when deriving human health water quality criteria associated with the consumption of "organisms only" for toxic pollutants with a low BCF. It is possible to exceed the RfD based on chronic toxicity when incidental ingestion occurs at the criterion concentration established for protecting human health for consumption of organisms only. Before finalizing the criteria revisions, EPA should compare the potential for acute toxicity from incidental ingestion of acutely toxic

substances to the threshold for acute toxicity. The submitter uses cyanide as an example of a chemical for which acute and chronic effects from incidental ingestion of water should be considered as we develop human health water quality criteria.

*Response*—In developing the 2000 Human Health Methodology, EPA reviewed estimates of incidental water ingestion rates averaged over time. Based on this review, EPA generally believes that the averaged amount is negligible and will not impact the chemical criteria values that represent both drinking water and fish ingestion, unless (as indicated in the 2000 Methodology) the chemical exhibits minimal or no bioaccumulation potential.

EPA expects that the cyanide criterion for consumption of organisms only established based on the 2000 Human Health Methodology is generally protective of human health. However, cyanide is an acutely toxic substance (with a low bioaccumulation potential), and the resulting criterion of 16,000 ug/L derived for consumption of organism only may not protect humans from acutely toxic effects. Thus, EPA considers it prudent health policy to establish the criterion concentration for consumption of organisms only at the same level as the value for protecting human health for consumption of water and organisms (140 ug/L). The EPA's IRIS RfD that we used to derive the criterion is based on free cyanide. If a substantial fraction of the cyanide present in a water body is present in a complexed form (e.g.,  $\text{Fe}_4[\text{Fe}(\text{CN})_6]_3$ ), this recommended criterion may be overly conservative. State and authorized Tribes, however, have the discretion to modify section 304(a) criteria to reflect site-specific conditions.

c. Future updates of human health water quality criteria should consider additional exposure routes.

*Scientific view*—A submitter supported EPA's plans to include additional exposure routes resulting from recreational activities (e.g., dermal, inhalation).

*Response*—EPA appreciates the submitter's support. As stated in the published draft methodology revisions (65 FR 66444; November 3, 2000) and in *Response to Peer Review Comments on Draft Revisions to the Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health* (EPA-822-R-00-009, August 2000), EPA acknowledges that the potential for inhalation and dermal exposures exist, and an approach to account for them in the context of developing individual

water quality criteria is appropriate. EPA intends to refine the 2000 Human Health Methodology in the future to incorporate guidance on inhalation and dermal exposures.

d. National default BCFs and BAFs should not be used in the derivation of water quality criteria.

*Scientific view*—A submitter stated that the 15 proposed human health water quality criteria are based, in part, on using national default BCFs or BAFs without demonstrating that a statistically and ecologically significant correlation exists between the compound in the water column and levels found in fish tissues. The submitter uses methylmercury as an example of a chemical for which that correlation has not yet been demonstrated. As a consequence, the submitter strongly objects to the use of BCFs or BAFs in deriving the criteria. The submitter further stated that EPA should notify States and authorized Tribes not to adopt the revised criteria into State or Tribal standards until they can confirm a statistically significant (and important) relationship between water column concentrations and fish tissue concentrations.

*Response*—Using national default BCFs for water quality criteria began in 1980 and is necessary to ensure that criteria related to human ingestion of fish and shellfish will be protective of the consumer human populations who eat them. The BCF values determined for the water quality criteria represented the best scientific information available at the time. BCFs for nonionic organic chemicals that were determined from Veith *et al.* (1979) are based on a statistically significant correlation between experimentally determined chemical concentrations in water and fish tissues. We describe in detail the scientific basis for applying this data in the 1980 Ambient Water Quality Criteria National Guidelines (45 FR 79347).

EPA recognizes that many scientific advances have occurred in the area of bioaccumulation since it published the 1980 Methodology. As a result, EPA has revised the bioaccumulation portion of the 1980 Methodology to reflect the current state of science and to improve accuracy in assessing bioaccumulation for setting 304(a) criteria. EPA's *Methodology for Deriving Ambient Water Quality Criteria for Protection of Human Health* (2000) (65 FR 66444; hereafter referred to as the "2000 Methodology") contains the revised procedures for incorporating bioaccumulation in ambient water quality criteria (AWQC) and a summary of the key changes. EPA will publish more detailed information on the BAF