Under each of the regulatory options presented in today's proposal, the Agency is using the same risk level for Groups A, B, and C carcinogens. This approach is consistent with the way carcinogens were treated in the 1990 Toxicity Characteristic rule, hazardous waste listing determinations, and the delisting program. The rationale for this approach is that while the classifications indicate the type (human or animal) and strength of the studies available which reflects upon the uncertainty about the carcinogenic potential, the severity of the effect, cancer, warrants equal treatment. It is important to note that a few Group C carcinogens do not have slope factors or unit risks. In these cases the Agency used the benchmark developed for the non-cancer endpoint.

c. Consideration of MCLs

The Agency is proposing two approaches for setting human health-based levels for carcinogens and non-carcinogens in routes of exposure involving water ingestion. For the first approach, the Agency is proposing to use Maximum Contaminant Levels (MCLs) promulgated under the Safe Drinking Water Act (SDWA) of 1974, as amended in 1986, as the human health-based levels for the constituents for which they have been established. In general, MCLs for non-carcinogens are derived from the Reference Doses (RfDs), while MCLs for most carcinogens are set as close to zero as technically and economically feasible; this normally corresponds to risk levels that range from 10^{-4} to 10^{-6}. (Note that, although the derivation of MCLs considers feasibility of treatment, analytic chemistry, and cost factors in addition to health effects, it also considers other routes of exposure. The Agency's policy has been to use MCLs, when available, in other similar concentration-based programs.) For those constituents which do not yet have MCLs, the Agency is proposing to use oral reference doses (RfDs) for non-carcinogens and oral slope factors for carcinogens as described above. However, if new MCLs are finalized under the SDWA prior to the promulgation of today's rule, the Agency proposes to substitute the new MCLs for the RfDs and slope factor-derived human health-based levels for water ingestion presented in today's notice.

For the second approach, the Agency intends to propose to use only RfDs and slope factors in deriving human health-based levels for water ingestion. The Agency requests comment on these two approaches.

2. Ecological Benchmarks

Ecological benchmarks were developed for a variety of ecological receptors based on the availability of data. Benchmarks were needed for mammals, birds, plants, soil fauna, fish, aquatic invertebrates, aquatic plants, and benthos (sediment-dwelling organisms). A much smaller number of constituents have been evaluated by the Agency for ecological effects than have been for human health effects, as discussed under V.A. In general, measurement endpoints were selected: (1) For consistency with the Agency's Framework for Ecological Risk Assessment (U.S. EPA 1992x), the Great Lakes Initiative, and other ecological efforts within the Agency, and (2) relevance to the ecological receptor. As discussed in ''Section D—Risk Assessment'' the ecological assessment focussed on inferring the sustainability of populations and communities within ecosystems. Therefore, benchmarks were derived from measurement endpoints (i.e., reproductive, developmental, growth, survival, and mortality) from which such inferences could be made. Reproductive studies (e.g., number of viable young per female) were preferred over other endpoints. For some constituents, acute or mortality studies were used, however, this occurred only for developing benchmarks for fish, aquatic invertebrates, and benthos where protocol exists (AWQC development) for using such data. The Agency seeks comment on the measurement endpoints selected for each ecological receptor.

The toxicological benchmarks were established using the more conservative no effects level (or concentration) approach for ecological receptors as compared to a 20% effects level. The 20% effects level is the lowest level for ecological effects that can be detected in field population analyses (Suter et al., 1992). Although the 20% effects level may indeed be the lower limit that could be reliably confirmed in field studies, this level reflects our current analytical abilities and not necessarily the ecological significance of the effects level. The no effects approach was taken because the ecological analysis infers the sustainability of various populations under the assumption that if a sufficient number of populations within an ecosystem is protected, then the likelihood of adverse effects that are causally related to the chemical stressor will be reduced at the ecosystem level. The Agency was concerned that if an effects approach was taken, then the assumption underlying the ecological analysis would no longer be valid. The Agency seeks comment on the approach taken for setting toxicological benchmarks.

Given the number and variety of ecological receptors included in the analysis (predatory birds to soil fauna) as well as the variety of effects and endpoints considered, the benchmark development process required an approach that was internally consistent and acknowledged, at least qualitatively, the uncertainty involved in estimating ecological benchmarks. The Agency, therefore, developed a benchmark classification scheme to incorporate both the relationship of the benchmark to the entire toxicity data set and the adequacy of the database used to derive the benchmark. Three classifications were established: Adequate, provisional, and interim. These classifications were developed on a receptor group-specific basis (i.e., fish and aquatic invertebrates, benthos, mammals, birds, soil fauna, and terrestrial plants) and represent a weight-of-evidence designation for the toxicological benchmark. In many respects, this classification scheme is similar in meaning to the human carcinogen weight-of-evidence groups and the difference between ''verified'' values on IRIS and ''unverified'' values in HEAST. The classifications relate to the certainty assigned to a given ecological benchmark. The benchmarks were treated the same in the analysis regardless of classification. See Section 4 in the ''Technical Support Document for the Hazardous Waste Identification Rule: Risk Assessment for Human and Ecological Receptors'' for details on each classification and how they were used for each ecological receptor group. The Agency seeks comment on the classification developed for the analysis.

Below is a discussion of how benchmarks were developed for each of the receptor groups. For a detailed discussion of each of their developments, see Section 4, ''Benchmarks,'' and Appendix B, ''Toxicological Profiles for Ecological Receptors,'' of the ''Technical Support Document for the Hazardous Waste Identification Rule: Risk Assessment for Human and Ecological Receptors.'' The Agency seeks comment on the overall development of each of the ecological benchmarks generated for this proposed rule.

For populations of birds and mammals, the overall approach used to establish toxicological benchmarks was similar to the methods used to establish RfDs for humans as described in IRIS. Each method uses a hierarchy for the selection of toxicity data (e.g., no effects