

4. Conclusions

There are several reasons supporting the recommendation to use component-based approaches that assume additive joint toxic action in exposure-based assessments of possible noncancer or cancer health hazards from oral exposure to mixtures of radiostrontium, radiocobalt, radiocesium, trichloroethylene, and PCBs. There are no direct data available to characterize health hazards (and dose-response relationships) from mixtures containing all five components. Similarly, PBPK/PD models have not yet been developed that would predict pertinent target doses of the components under scenarios involving exposure to mixtures of all five components. Finally, available information on toxic actions of the individual components indicates that joint actions of radiostrontium, radiocobalt, radiocesium, trichloroethylene, and PCBs on several toxicity targets are plausible, including hematological effects, immunological effects, reproductive effects, altered neurodevelopment, neurological alterations, hepatic injury, and cancer. With data on the individual components suggesting possible sites of joint toxic action, but no data available on the toxicity or behavior of the complete mixture or the relevant submixtures, a default component-based approach assuming additivity was therefore recommended.

Weight-of-evidence analyses of available data on the joint toxic action of mixtures of these components indicate that scientific evidence for greater-than-additive or less-than-additive interactions among these components is limited to a potentially greater-than-additive effect of PCB exposure on trichloroethylene-induced hepatic and neurological effects. Data are inadequate to characterize the possible modes of joint action on most of the pertinent toxicity targets. Therefore, it is recommended that additivity be generally assumed as a public health protective measure in exposure-based assessments of health hazards from exposure to mixtures of these components, with additional consideration being given to the potential for greater-than-additive action of PCBs on trichloroethylene-induced effects.