

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 CDDs, hexachlorobenzene, *p,p'*-DDE, methylmercury, and PCBs. There are no direct data available to characterize health hazards (and dose-response relationships) from mixtures containing all five components. 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 CDDs, hexachlorobenzene, *p,p'*-DDE, methylmercury, and PCBs on several toxicity targets are plausible, including nervous system development, immune functions, reproductive organ development, and cancer.

The detection of CDDs, hexachlorobenzene, *p,p'*-DDE, methylmercury, PCBs, and other potential neurotoxicants in samples of human breast milk has led to epidemiological studies of possible neurological deficits in children exposed *in utero* and during nursing to persistent chemicals in breast milk. Mild neurodevelopmental deficits have been identified as a possible health hazard in these studies, but the results are suggestive that observed deficits may have been associated with gestational rather than lactational exposure to persistent chemicals. These studies do not establish causal relationships and are not directly useful for assessment of health hazards specific to a community or scenarios involving exposures to mixtures of CDDs, hexachlorobenzene, *p,p'*-DDE, methylmercury, and PCBs.

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 and inadequate to characterize the possible modes of joint action on most of the pertinent toxicity targets. Therefore, it is recommended that additivity be assumed as a public health protective measure in exposure-based screening assessments for potential hazards to public health from exposure to mixtures of these components. When the screening assessment indicates a potential hazard, further evaluation is needed, using biomedical judgment and community-specific health outcome data, and taking into account community health concerns.