routes for pesticide use rather than routes for pesticide wastes.

In addition, several commenters believe that dithiocarbamates as a group and individual dithiocarbamates did not meet the listing criteria set out in 40 CFR 261.11. Specifically, several commenters felt the Agency has not demonstrated that dithiocarbamates meet the reactivity criteria of 40 CFR 261.23(a) (1), (2), (3), and (4) or the toxicity criteria of 40 CFR 262.11(a)(2).

The Agency believes that it has accurately characterized the waste streams generated by carbamate manufacturers. In some cases waste streams that resulted from the treatment of commingled streams from carbamate and non-carbamate streams were sampled and analyzed. This is because, at many facilities, carbamate manufacturing is only part of the production activities occurring. It is common (especially for wastewaters) at carbamate manufacturing facilities to commingle wastes prior to treatment and disposal. The Agency believes that when streams are commingled for the purpose of treating one with the other that it was appropriate to sample the commingled stream. For example, at Zeneca's Bucks, AL facility, the Agency analyzed several streams that result from the treatment of thiocarbamate wastes as well as other processes. These streams are derived from carbamate streams and it is appropriate to characterize these streams and consider them for listing as hazardous. Specifically, the benzene and toluene in the commingled streams from the noncarbamate processes at Zeneca are used to extract the thiocarbamates from the wastewater streams because thiocarbamates are extremely soluble in benzene and toluene. Thus, since the commingling of the waste streams also provides a treatment step for the thiocarbamate wastewaters, it was appropriate to include the commingled streams in the risk assessment and use this information during the listing determination. In addition, while some constituents of concern may not be from carbamate processes, these were never the sole driving force behind the listing decision. In the specific case of thiocarbamate wastes, high concentrations of thiocarbamate products are present and clearly pose the potential for damage to human health or the environment if not properly managed.

The Agency believes that it has collected sufficient information and data to support listing of the six K wastes. During the carbamate industry study, the Agency collected generation and management information from all

carbamate manufacturers identified in the United States during 1991 using a RCRA Section 3007 survey. To supplement the data and information collected in the survey, the Agency visited nine carbamate facilities and collected waste samples at eight of these facilities. These facilities are representative of the carbamate industry and produce 55 percent by weight of all carbamates manufactured in the U.S. These eight facilities represent products that make up over 89 percent of overall carbamate production. The Agency collected and analyzed approximately 60 samples from these facilities. These samples were supplemented by 26 samples collected from carbamate facilities by the Office of Water during the development of the effluent guidelines for pesticide manufacturers. The Agency believes that the 86 samples are representative of the wastes generated by carbamate manufacturers and that these analyses, in addition to the information provided in the RCRA Section 3007 surveys, provide sufficient data to support this rulemaking.

The Agency also believes that it is acceptable to propose both additions to appendix VIII and appendix VII at the same time. The Agency believes that it has the basis for proposing additions to appendix VIII based on the presence of the constituents in carbamate wastes and their toxicity. In addition, the Agency took comments on the proposed additions to appendix VIII. There is nothing that prohibits the simultaneous hazardous waste listing and appendix VIII addition, provided that the Agency solicits and responds to public comment on both actions. The Agency believes that listing the wastes and making the additions to appendix VIII simultaneously is an efficient system for developing the regulations and allows for public participation. Simultaneous hazardous waste listing and addition to appendix VIII is a long-standing practice of the Agency. In addition, the Agency notes that the following constituents which are part of the basis for these hazardous waste listings were on appendix VIII at the time this rule was proposed: benzene, chloroform, methyl ethyl ketone, methylene chloride, pyridine, carbon tetrachloride, formaldehyde, and methyl chloride.

The Agency also believes that it has demonstrated that the K156 through K161 wastes meet the listing criteria of 40 CFR 261.11. The Agency considered each of the criteria outlined and determined that these wastes are capable of posing a substantial threat to human health and the environment when improperly treated stored, transported or disposed. The Agency

disagrees with the commenter with regard to the management scenarios used in the listing determinations. The mismanagement scenarios that were used in the evaluation of carbamate wastes were not hypothetical, but were based on actual waste management practices currently used by the industry. Because these practices are, in fact, engaged in by the industry they are plausible management scenarios for these wastes. The Agency did not rely on pesticide use exposure routes and specific damage incidents as the sole basis for listing. Specific damage incidents involving pesticides were used as supporting documentation that carbamates can have a significant environmental impact if improperly disposed.

EPA believes that dithiocarbamate wastes pose significant risks to human health and the environment, because these materials are bioavailable and degradable and have the potential to exhibit significant aquatic toxicity, reproductive and neurological effects, and have the potential once released in the environment to form among other degradation products, carbon disulfide (a potent reproductive and neurological toxicant).

These risks specifically meet EPA's listing criteria as described in the preamble to the dyes and pigments listing determination (59 FR 66072, December 22, 1994). With regard to the toxicity of the dithiocarbamates, the Agency believes that in addition to the toxic effects of intact dithiocarbamates, the formation of toxic decomposition products is a major concern for dithiocarbamates. Dithiocarbamates exhibit risks as a result of the parent compound, metal ion, and daughter products. As presented in the proposed rule, dithiocarbamates exhibit acute aquatic toxicity in a narrow range for those compounds with available data  $(LC_{50} \text{ of } 0.049 \text{ to } 2.9 \text{ mg/L})$ . As a chemical class dithiocarbamates exhibit reactive properties (i.e., react in water under ambient environmental pH conditions to form sufficient toxic gas, fumes, or vapors to either create a toxic or irritating atmosphere or to impart toxicity to the aqueous media are reactive wastes subject to existing hazardous waste regulation as Hazardous Waste No. D003 (40 CFR 261.23(a)(4))). Dithiocarbamates react under acidic conditions to form carbon disulfide, which has potent reproductive effects. One commenter supplied confidential studies showing that under pH 2 conditions over eight hours less than one percent of the dithiocarbamate products tested decomposed. The Agency calculates