control in the above areas. In the current benefits assessment, the Agency has identified alternative active ingredients (pyrethrins or resmethrin as aerosol sprays; chlorpyrifos, cypermethrin, diazinon, propetamphos, or propoxur as residual surface sprays) as well as nonchemical practices (sanitation, exclusion, heat, cold, modified atmospheres, pheromones, parasites, etc,) that, alone or in combination, may replace the use of dichlorvos. In the absence of comparative efficacy or resistance data, EPA assumes that the registered alternative active ingredients identified would provide adequate levels of insect control. EPA is not certain what percentage of insect control can be attributed to the non-chemical control methods discussed.

Comment. WHB Specialty Products Co. (WHB) commented that because of declining usage after 1983, any regulatory action taken by the U.S. EPA would have no economic impact on sales of their end-use products, which are used for control of insects on beef and dairy cattle and in livestock buildings.

Agency response. This comment is consistent with the Agency's information that usage is declining.

Comment. Consumers Union commented that the benefits of dichlorvos use in "bug sprays," flea collars, and resin strips are negligible.

Agency response. EPA's current benefits assessment for dichlorvos has identified from one to several alternatives for the use of dichlorvos in "bug sprays" (In and Around Domestic Dwellings), resin strips (numerous sites), and pet flea collars (Domestic Animals). Based on the information available at this time, it is the Agency's opinion that the benefits for dichlorvos use in the areas mentioned above are negligible. In the absence of comparative efficacy or resistance data, EPA assumes that available registered alternatives would provide adequate control of the insect pests.

Comment. Amvac Chemical Corporation commented on the use of dichlorvos in warehouses and food processing areas. Amvac states that the alternatives are not as effective and are more expensive than dichlorvos.

Agency response. The current EPA benefits assessment (commercial, industrial, and institutional areas) and the comments from Amvac are in agreement as to pests controlled, primary methods in which dichlorvos is applied, and the potential alternatives to dichlorvos. Amvac states that the alternatives are not as effective as dichlorvos and refers to a survey and personal communications as the source

for their conclusions. In the absence of comparative efficacy or resistance data, the Agency assumes that the registered alternatives would provide adequate control of the insect pests in warehouses and food processing plants. In addition, the Agency identified several nonchemical methods of insect control in warehouses and food processing facilities that Amvac did not include in their comments. EPA believes that in recent years alternative methods such as sanitation, exclusion, heat, cold, modified atmospheres, parasites, and the use of pheromone traps have become more common but the Agency has no data that identifies the percentage of insect control that can be attributed to these methods.

Comment. Amvac Chemical Corporation commented on the benefits and use of dichlorvos to control insects on dairy and beef cattle and in the premises housing these animals. Amvac states that resistance to some of the

alternatives is a problem.

Agency response. The current EPA benefits assessment for dichlorvos includes the following sites that relate to food or nonfood animals and their premises: direct application to food and nonfood animals, in and around premises housing food and nonfood animals, manure treatments, and feedlots. The pests and their potential damage to animals, the primary methods of using dichlorvos, and the potential alternatives identified are similar in both the EPA assessment and Amvac's comments. EPA is aware that resistance to some of the alternatives may have occurred; however, EPA does not have any data identifying specific compounds, insect species, or the extent of any resistance problem. Amvac relied on personal communications and surveys to support their statements but did not submit data to substantiate their claims regarding efficacy or resistance. In the absence of comparative efficacy or resistance data, EPA assumes that all registered products would provide adequate insect control.

Comment. Amvac Chemical Corporation commented on the benefits and use of dichlorvos in domestic dwellings and in pet flea collars. Amvac states that the alternatives are not as efficacious as dichlorvos (based on personal communications) but includes no comparative efficacy and/or resistance data with their comments.

Agency response. In the current benefits assessment, EPA addressed these sites under the headings in and around domestic dwellings and domestic animals (Cats and Dogs). The EPA list of pests, primary methods of dichlorvos applications, and potential

alternatives for these two sites was similar to the information provided by Amvac. In the absence of efficacy and/ or resistance data, the Agency assumes that the identified registered alternatives would provide adequate control of the pests.

Comment. Amvac Chemical Corporation commented on the benefits and use of dichlorvos in food markets and eating establishments. Amvac stated that the alternatives are less effective and more costly.

Agency response. The section titled "Commercial, Industrial, and Institutional Areas" in the current EPA benefits assessment for dichlorvos includes information on eating establishments. Because of the lack of information, EPA did not include food markets in the benefits assessment. The EPA assessment for eating establishments included many of the same pests, the same primary methods of dichlorvos application, and the same potential alternatives as identified in the Amvac comments. Although Amvac states that the alternatives are less effective and more costly, they did not include supporting data with the comments. In the absence of data, the Agency assumes that the identified alternatives would provide adequate control of the pests.

Comment. Amvac Chemical Corporation commented on the benefits and use of dichlorvos resin strips in popcorn storage bins. Amvac identified the pyrethrins as a fogging treatment in bin head spaces or actellic (pirimiphosmethyl) as a protectant applied to the popcorn. Amvac states that neither the pyrethrins nor pirimiphos-methyl is as cost effective or efficacious as

dichlorvos.

Agency response. The Agency has no specific information regarding insect control in stored popcorn and did not include this specific site in the current assessment; however, EPA does have information for the treatment of other stored grain products. The Agency believes that the pyrethrins can be used as a head space treatment; however, EPA has no information concerning the number of treatments of pyrethrins it would take to provide the same level of control as obtained with the dichlorvos pest strips. The dichlorvos impregnated resin pest strips can provide insect control for several months.

IV. Risk/Benefit Analysis and Proposed **Regulatory Decisions**

A. Summary of Risk/Benefit Analysis

EPA has concluded that the risks outweigh the benefits for most uses of dichlorvos, and therefore, proposes a