variety of measures to reduce risks to the acceptable level, including: Cancellation of some uses, requiring protective clothing, specifying reentry intervals, and restricting use to certified applicators. Tables 4 and 5, in this unit, summarize EPA's risk/benefit analyses and proposals for risk mitigation. The benefits are not expected to be significant for most sites, with the possible exceptions of packaged or bagged nonperishable raw and processed food, livestock, poultry, and mushroom houses. The lack of known significant benefits for most sites is outweighed by the potential total dietary cancer risk of 4.4 x 10⁻⁶ from use of dichlorvos and 5.1 x 10-6 from dichlorvos residues due to dichlorvos plus naled, and the occupational and residential risks involving several MOEs less than 100 (some less than 10) for ChE inhibition.

EPA considered measures short of cancellation to reduce occupational and residential risks, such as restricted reentry intervals, personal protective equipment, and restricting use to certified applicators. Where appropriate, these measures are proposed; however, cancellation is proposed for several uses because risk mitigation measures are not expected to reduce risk sufficiently.

There are a variety of alternatives available for dichlorvos, varying from use to use. EPA compared the toxicity of several alternatives for some major sites to understand the effect of canceling dichlorvos. This discussion of alternatives relates to the hazards posed by each pesticide in its technical form and does not take into account differing exposures resulting from application equipment used, or frequency or rate of application. The risk from a pesticide is a function of both the hazard or toxicity of the pesticide and the extent to which an individual is exposed. Alternatives fall into three chemical types, organophosphates, carbamates, and others. Organophosphates and carbamates inhibit ChE activity and result in neurotoxic effects. Several of the other alternatives are pyrethroids, including cypermethrin, permethrin, dphenothrin and resmethrin. The pyrethrins and pyrethroid compounds present less of an acute hazard than the ChE-inhibiting alternatives. Exposure to the pyrethroids and pyrethrins can result in neurotoxicity, but the effects are rapidly reversible and only occur at much higher doses than for organophosphates. Pesticide poisoning incidents involving workers have been reported for several registered alternatives including, chlorpyrifos, diazinon, and malathion. Dichlorvos is a Group C (possible human) carcinogen,

while for some alternatives there is no evidence of carcinogenicity or there are data gaps. Propoxur is a Group B2 (probable human) carcinogen and permethrin is a Group C. Dichlorvos has a higher cancer potency than either of these two chemicals. Also, the pyrethroids and pyrethrins are less toxic than dichlorvos following chronic exposure. Of all registered alternatives, only diazinon had an RfD lower than dichlorvos. Finally, no significant developmental or reproductive effects were reported for dichlorvos or any of the alternatives.

B. Proposed Regulatory Actions

1. Dietary risk. EPA is proposing cancellation of dichlorvos for use on bulk, packaged, and bagged nonperishable raw and processed food, because of the unacceptable risk posed by this use. Table 4, in this unit, compares the dietary cancer risk before and after the actions proposed in this notice. The estimated upperbound excess individual lifetime dietary cancer risk (before EPA's proposed action) from application of dichlorvos is 4.4 x 10-6 and from naled-derived dichlorvos is 7.2 x 10-7, for a total of 5.1 x 10-6. The major source of estimated dietary risk is packaged, bagged or bulk nonperishable processed or raw food (3.4 x 10-6). The estimated risk from the three individual tolerances and FAR (bulk raw, packaged or bagged raw, and packaged or bagged processed) cannot be separated because, as discussed earlier, a single commodity may be treated more than once at different stages of production. Following EPA's proposed actions, discussed below, the remaining total dietary risk would be 1.7×10^{-6} , including dichlorvos derived from naled. This estimated dietary risk is believed to overestimate the actual risk because: (1) The estimated risk from naled residues is probably high because EPA assumed that the mosquito/fly control use (without regard to specific crops) would result in one percent of all commodities having residues; (2) EPA is assuming that 100 percent of the naled residues will metabolize into dichlorvos, which is probably not the case; and (3) the risk from milk (6.2 x10-7 or about one-third of the risk after the proposed action) is believed to be an overestimate because the anticipated residues used in the risk assessment are based on one-half the limit of detection, which was used because no residues were found in milk following exaggerated application of dichlorvos. This dietary risk assessment could underestimate dietary risks from treated food in food handling establishments, since this risk in not included in the

risk assessment; however, if the proposal to cancel use in commercial establishments, due to applicator and reentry risks, is finalized, this potential dietary risk will no longer exist.

2. Use on bulk, packaged or bagged nonperishable raw and processed food. EPA is proposing cancellation of these uses because of unacceptable dietary risks, and because of the unacceptable risk to workers from applying dichlorvos to stored food and reentering treated areas. (See paragraph 3--Warehouses in this unit.)

i. The estimated dietary risk from dichlorvos, 3.4 x 10⁻⁶, is of concern because it exceeds the Agency's 10-6 negligible risk level. This group of uses is treated as one use here for purposes of risk estimation because consumption data do not permit a more detailed breakdown. This is an unusual site in that it is not specific to a location such as greenhouses or tobacco warehouses. Bulk, packaged, or bagged food can be found in a variety of locations including food handling establishments (food service, food manufacturing, and food processing establishments), in warehouses, shipholds, trucks and any other location where food is stored. Since the proportion of commodities stored in bulk compared to packaged/ bagged food is unknown, it is not possible to clearly separate these risks or limit the scope of this proposal. Also, EPA does not believe that it is possible to reduce the frequency or amount of dichlorvos applications to decrease dietary risk to an acceptable level.

ii. There are potentially significant benefits for this use. The major alternatives are pyrethrins, and the absence of dichlorvos may require fumigant treatments. Cancellation of this use would result in increased costs estimated to be \$12 million to replace dichlorvos with pyrethrins, plus, if needed, the additional cost of supplemental fumigations would be about \$33 million with methyl bromide or \$44 million per year with aluminum phosphide. Without the use of fumigants in supplementing pyrethrins there could be some loss in efficacy; however, EPA has no basis to confirm or estimate this loss. Although there are potential significant economic impacts, EPA believes that the dietary cancer risks to the general public outweigh the benefits. Therefore, EPA is proposing cancellation of use on bulk, packaged or bagged nonperishable raw and processed food. EPA is interested in comments on the effect of this proposal. The dietary risk discussed may also be affected by the pending revocation of the section 409 FAR for residues of dichlorvos on packaged or bagged