trichlorfon because of the longer PHIs. As a result, the dietary exposure assessment for dichlorvos includes residues of dichlorvos resulting from the application of naled but not from trichlorfon. Neither naled or trichlorfon, themselves, have carcinogenic potential in humans as concluded by EPA (Refs. 41 and 42)

iii. Data available for determining the ARC. Possible sources of data to estimate the levels of residues to which the public is exposed, when consuming treated commodities include: Tolerance levels, controlled field trials, Food and Drug Administration (FDA) surveillance and compliance monitoring data, FDA Total Diet Study data (market basket survey based on a random sampling of residues on food in grocery stores), USDA pesticide data program, and USDA/FSIS (Food Safety Inspection Service) livestock monitoring data. The estimated levels of residues can then be adjusted for the effects of processing using processing studies, including commercial processing studies, washing studies, cooking studies, and residue degradation studies. Of these sources, the Agency relied on tolerance levels and field trial data (adjusted for the effects of processing and cooking) to estimate dietary exposure to dichlorvos. For a variety of reasons, the other sources did not provide useful data (Ref. 43)

(a) Tolerance levels. Tolerance levels are used for an initial dietary exposure analysis. Use of tolerance levels typically overestimate chronic exposure because tolerance levels are set at a level that is not likely to be exceeded when the pesticide is used according to the label. Tolerance levels are also used in dietary exposure assessments when no other appropriate data are available. In the case of dichlorvos, no other data are available which reflect currently registered uses on cucumber, lettuce, tomato, and radish, and, therefore, tolerance levels are used here to estimate residues on these crops.

(b) Field trials. Data from controlled field trials which reflect currently registered uses are not available for most agricultural uses of dichlorvos, since these uses are not being supported for reregistration. Field trial data are available for mushrooms and figs, and data from direct dermal treatments to cattle and poultry are discussed in the dichlorvos Registration Standard. Field trial data are also available for use on packaged or bagged food, use in food manufacturing and processing facilities, and for secondary residues in livestock commodities. EPA is including residue estimates for figs (raw and dried), even though these tolerances were revoked,

because figs may be located in warehouses or areas where similar packaged, bagged, or bulk commodities are treated.

(c) Processing and cooking studies. Residues for raw commodities can be modified by processing factors to account for changes during commercial or other processing and cooking. Processing, cooking and decline (halflife) studies were available for cocoa beans, dry pinto beans, tomato juice, ground roasted coffee beans, raw hamburger meat, raw eggs, and raw whole milk. The resulting cooking factors were used to reduce the Agency's estimate of residues for these commodities and were translated to other commodities based on similarity of cooking time and temperature. Additional cooking studies were available and discussed in the Residue Chemistry Chapter of the Registration Standard. Half-lives of dichlorvos in various commodities ranged from 0 to over 1,000 hours. The reduction of dichlorvos in cooking appeared to be related to the length of time and temperature used in cooking. Residues were adjusted based on these cooking factors to obtain the ARC.

(d) Anticipated residues for dichlorvos—(1) Raw commodities. The following registered uses are not being supported for reregistration and the Agency does not have residue data reflecting current uses: tomatoes, cucumbers, lettuce, and radishes. Therefore, current tolerance levels are assumed in the exposure assessment. Amvac has requested voluntary deletion of these uses from their labels; however, because the deletion of these uses is not final, EPA is including these commodities in the exposure assessment. Anticipated residues for raw commodities as bulk, packaged, or bagged food are discussed below.

(2) Meat, milk, poultry and eggs. Residues in livestock tissues, including milk and eggs, may result from consumption of dichlorvos treated livestock feeds, direct dermal treatments, or from use as a drug in swine. Livestock metabolism studies done at exaggerated rates in ruminants and poultry have demonstrated that oral ingestion of dichlorvos by cattle and poultry will not result in detectable residues. This conclusion can be extended to the drug use of dichlorvos in swine. Secondary residues in livestock from consumption of treated feed are expected to be so low that EPA is estimating these residues as zero. Data reflecting direct livestock treatments are discussed in the Residue Chemistry Chapter of the Dichlorvos Registration Standard. Data from direct dermal

studies indicate that detectable residues are not expected, except in skin. Residues are non-detectable (<0.01 ppm) in cattle tissue and milk, and nondetectable (<0.05 ppm) in poultry tissues and eggs. The exposure assessment uses one-half the limit of detection in both cases. In the absence of direct dermal studies for swine, the Agency estimated the residue on swine to be 0.08 ppm. This estimate was based on a study in poultry that approximated the rate for direct dermal swine treatment.

(3) Bulk stored, packaged or bagged commodities, food and feed handling uses. The ARCs used in the exposure assessment for packaged, bagged or bulk stored food are based on studies submitted by Amvac (Ref. 44). Residue data were submitted for many commodities. For those commodities where data were not submitted, EPA translated residue data from similar commodities. For example, data on dry beans are translated to other legumes; data on wheat flour are translated to all flours and meals, etc. In addition, residue data were provided for corn and oats at various points during processing, and for flour, sugar, dried milk, dried eggs, shortening, and baking mix from a treated manufacturing facility. Bulk stored commodities are assumed to be uncovered when treated. Although pesticide labels state that bulk or unpackaged foods should be covered or removed before spraying, it is not possible to assess the effect of covering food since the type of material used in the cover is not specified and the manner in which food is covered would vary considerable. Therefore, food is assumed to be uncovered. Since the proportion of commodities stored in bulk vs. packaged/bagged is unknown, the ARCs are based on an average of the residues found in bulk and packaged/ bagged food for any particular commodity.

The FAR in 40 CFR 185.1900 for packaged or bagged nonperishable processed foods and the tolerance in 40 CFR 180.235 for nonperishable packaged, bagged or bulk raw food do not refer to specific commodities. Therefore, EPA has developed a list of commodities likely to be treated with dichlorvos that are covered by tolerances and/or FARs. Because these tolerances and FARs were established to cover residues resulting from use at different sites (for example, wheat could be treated in its raw form in a silo, later as flour, during processing into cake mixes, and finally as a stored packaged commodity), cancellation of any one of the site-specific uses does not necessarily eliminate the risk of a