IX. Public Docket

A record has been established for this rulemaking under docket control number [OPP–300537]. A public version of this record, which does not include any information claimed as CBI, is available for inspection from 8:30 a.m. to 4 p.m., Monday through Friday, excluding legal holidays. The public record is located in Room 1132 of the Public Information and Records Integrity Branch, Information Resources and Services Division (7506C), Office of Pesticide Programs, Environmental Protection Agency, Crystal Mall #2, 1921 Jefferson Davis Highway, Arlington, VA 22202.

Electronic comments can be sent directly to EPA at:

opp-docket@epamail.epa.gov

Electronic comments must be submitted as an ASCII file avoiding the use of special characters and any form of encryption.

The official record for this rulemaking, as well as the public version, as described above, is kept in paper form. Accordingly, in the event there are objections and hearing request, EPA will transfer any copies of objections and hearing requests received electronically into printed, paper form as they are received and will place the paper copies in the official rulemaking record. The official rulemaking record is the paper record maintained at the Virginia address in Addresses at the beginning of this document.

X. Regulatory Assessment Requirements

This final rule establishes an exemption from the tolerance requirement under FFDCA section 408(d) in response to a petition submitted to the Agency. The Office of Management and Budget (OMB) has exempted these types of actions from review under Executive Order 12866, entitled Regulatory Planning and Review (58 FR 51735, October 4, 1993). This final rule does not contain any information collections subject to OMB approval under the Paperwork Reduction Act (PRA), 44 U.S.C. 3501 et seq., or impose any enforceable duty or contain any unfunded mandate as described under Title II of the Unfunded Mandates Reform Act of 1995 (UMRA) (Pub. L. 104–4). Nor does it require and prior consultation as specified by Executive Order 12875, entitiled Enhancing the Intergovernmental Partnership (58 FR 58093, October 28, 1993), or special considerations as required by Executive Order 12898, entitled Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (59 FR 7629), February 16, 1994), or require OMB review in accordance with Executive Order 13045, entitled Protection of Children from Environmental Health Risks and Safety Risks (62 FR 19885, April 23, 1997).

In additions, since tolerance exemptions that are established on the basis of a petition under FFDCA section 408(d), such as the exemption in this final rule, do not require the issuance of a proposed rule, the requirements of the Regulatory Flexibility Act (RFA) (5 U.S.C. 601 et seq.) do not apply. Nevertheless, the Agency previously assessed whether establishing tolerances, exemptions from tolerances, raising tolerance levels or expanding exemptions might adversely impact small entities and concluded, as a generic matter, that there is no adverse economic impact. The factual basis for the Agency's generic certification for tolerance actions published on May 4, 1981 (46 FR 24950), and was provided to the Chief Counsel for Advocacy of the Small Business Administration.

XI. Submission to Congress and the General Accounting Office

Under 5 U.S.C. 801(a)(1)(A), as added by the Small Business Regulatory Enforcement Fairness Act of 1996, the Agency has submitted a report containing this rule and other required information to the U.S. Senate, the U.S. House of Representatives and the Comptroller General of the General Accounting Office prior to publication of the rule in today's **Federal Register**. This is not a major rule as defined by 5 U.S.C. 804(2).

List of Subjects in 40 CFR Parts 180 and 186

Environmental protection, Administrative practice and procedure, Agricultural commodities, Animal feeds, Pesticides and pests, Reporting and recordkeeping requirements.

Dated: August 14, 1997.

Stephen L. Johnson,

Acting Director, Office of Pesticide Programs.

Therefore, 40 CFR part 180 is amended as follows:

1. The authority citation for part 180 continues to read as follows:

Authority: 21 U.S.C. 346a and 371.

2. Section 180.1184 is added to subpart D to read as follows:

§ 180.1184 Coat Protein of Watermelon Mosaic Virus-2 and Zucchini Yellow Mosaic Virus and the genetic material necessary for its production; exemption from the requirement of a tolerance.

An exemption fron the requirement of a tolerance is established for residues of the biological plant pesticide Coat Protein of Watermelon Mosaic Virus-2 and Zucchini Yellow Mosaic Virus and the genetic material necessary for its production in or on all food commodities.

[FR Doc. 97–22394 Filed 8-21-97; 8:45 am]

BILLING CODE 6560-50-P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 180 and 186

[OPP–300541; FRL–5739–7]

RIN 2070–AB78

Thiodicarb; Pesticide Tolerance

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: This regulation establishes a tolerance for combined residues of thiodicarb and its metabolite methomyl in or on broccoli, cabbage, cauliflower, and leafy vegetables (except *Brassica* vegetables). The petitioner, Rhone-Poulenc Ag Company, requested this tolerance under the Federal Food, Drug and Cosmetic Act (FFDCA), as amended by the Food Quality Protection Act of 1996 (FQPA) (Pub. L. 104-170).

DATES: This regulation is effective August 22, 1997. Objections and requests for hearings must be received by EPA on or before October 22, 1997.

ADDRESSES: Written objections and hearing requests, identified by the docket control number, [OPP–300541], must be submitted to: Hearing Clerk (1900), Environmental Protection Agency, Rm. M3708, 401 M St., SW., Washington, DC 20460. Fees accompanying objections and hearing requests shall be labeled ''Tolerance Petition Fees'' and forwarded to: EPA Headquarters Accounting Operations Branch, OPP (Tolerance Fees), P.O. Box 360277M, Pittsburgh, PA 15251. A copy of any objections and hearing requests filed with the Hearing Clerk identified by the docket control number, [OPP–300541], must also be submitted to: Public Information and Records Integrity Branch, Information Resources and Services Division (7506C), Office of Pesticide Programs, Environmental Protection Agency, 401 M St., SW., Washington, DC 20460. If you wish to submit in person, bring a copy of objections and hearing requests to Rm. 1132, CM #2, 1921 Jefferson Davis Hwy., Arlington, VA.

A copy of objections and hearing requests filed with the Hearing Clerk may also be submitted electronically by

sending electronic mail (e-mail) to: opp-docket@epamail.epa.gov. Copies of objections and hearing requests must be submitted as an ASCII file avoiding the use of special characters and any form of encryption. Copies of objections and hearing requests will also be accepted on disks in WordPerfect 5.1 file format or ASCII file format. All copies of objections and hearing requests in electronic form must be identified by the docket control number [OPP–300541]. No Confidential Business Information (CBI) should be submitted through e-mail. Electronic copies of objections and hearing requests on this rule may be filed online at many Federal Depository Libraries.

FOR FURTHER INFORMATION CONTACT: By mail: Thomas C. Harris, Registration Division 7505C, Office of Pesticide Programs, Environmental Protection Agency, 401 M St., SW., Washington, DC 20460. Office location, telephone number, and e-mail address: Crystal Mall #2, 1921 Jefferson Davis Hwy., Arlington, VA, (703) 305-5404, e-mail: harris.thomas@epamail.epa.gov.

SUPPLEMENTARY INFORMATION: In the **Federal Register** of March 5, 1997 (62 FR 10050)(FRL–5586–1) EPA issued a notice pursuant to section 408 of the Federal Food, Drug, and Cosmetic Act (FFDCA), 21 U.S.C. 346a(e) announcing the filing of a pesticide petition (PP) for tolerance by Rhone-Poulenc Ag Company, P.O. Box 12014, 2 T. W. Alexander Drive, Research Triangle Park, NC 27709. There were no comments received in response to the notice of filing.

The petition requested that 40 CFR 180.407 be amended by establishing a tolerance for combined residues of the insecticide thiodicarb (CAS number 59669-26-0, EPA chemical number 114501) and its metabolite methomyl (CAS number 16752-77-5, EPA chemical number 090301), in or on broccoli at 7 parts per million (ppm), cabbage at 7 ppm, cauliflower at 7 ppm , and leafy vegetables (except Brassica vegetables) at 35 ppm.

I. Risk Assessment and Statutory Findings

New section 408(b)(2)(A)(i) of the FFDCA allows EPA to establish a tolerance (the legal limit for a pesticide chemical residue in or on a food) only if EPA determines that the tolerance is ''safe.'' Section 408(b)(2)(A)(ii) defines ''safe'' to mean that ''there is a reasonable certainty that no harm will result from aggregate exposure to the pesticide chemical residue, including all anticipated dietary exposures and all other exposures for which there is reliable information.'' This includes exposure through drinking water and in residential settings, but does not include occupational exposure. Section 408(b)(2)(C) requires EPA to give special consideration to exposure of infants and children to the pesticide chemical residue in establishing a tolerance and to ''ensure that there is a reasonable certainty that no harm will result to infants and children from aggregate exposure to the pesticide chemical residue. . . .''

EPA performs a number of analyses to determine the risks from aggregate exposure to pesticide residues. First, EPA determines the toxicity of pesticides based primarily on toxicological studies using laboratory animals. These studies address many adverse health effects, including (but not limited to) reproductive effects, developmental toxicity, toxicity to the nervous system, and carcinogenicity. Second, EPA examines exposure to the pesticide through the diet (e.g., food and drinking water) and through exposures that occur as a result of pesticide use in residential settings.

A. Toxicity

1. *Threshold and non-threshold effect*. For many animal studies, a dose response relationship can be determined, which provides a dose that causes adverse effects (threshold effects) and doses causing no observed effects (the ''no-observed effect level'' or ''NOEL'').

Once a study has been evaluated and the observed effects have been determined to be threshold effects, EPA generally divides the NOEL from the study with the lowest NOEL by an uncertainty factor (usually 100 or more) to determine the Reference Dose (RfD). The RfD is a level at or below which daily aggregate exposure over a lifetime will not pose appreciable risks to human health. An uncertainty factor (sometimes called a ''safety factor'') of 100 is commonly used since it is assumed that people may be up to 10 times more sensitive to pesticides than the test animals, and that one person or subgroup of the population (such as infants and children) could be up to 10 times more sensitive to a pesticide than another. In addition, EPA assesses the potential risks to infants and children based on the weight of the evidence of the toxicology studies and determines whether an additional uncertainty factor is warranted. Thus, an aggregate daily exposure to a pesticide residue at or below the RfD (expressed as 100 percent or less of the RfD) is generally considered acceptable by EPA. EPA generally uses the RfD to evaluate the chronic risks posed by pesticide exposure. For shorter term risks, EPA calculates a margin of exposure (MOE) by dividing the estimated human exposure into the NOEL from the appropriate animal study. Commonly, EPA finds MOEs lower than 100 to be unacceptable. This 100-fold MOE is based on the same rationale as the 100-fold uncertainty factor.

Lifetime feeding studies in two species of laboratory animals are conducted to screen pesticides for cancer effects. When evidence of increased cancer is noted in these studies, the Agency conducts a weight of the evidence review of all relevant toxicological data including short-term and mutagenicity studies and structure activity relationship. Once a pesticide has been classified as a potential human carcinogen, the appropriate risk assessment (e.g., linear low dose extrapolations or MOE calculation based on the appropriate NOEL) will be carried out based on the nature of the carcinogenic response and the Agency's knowledge of its mode of action.

2. *Differences in toxic effect due to exposure duration*. The toxicological effects of a pesticide can vary with different exposure durations. EPA considers the entire toxicity data base, and based on the effects seen for different durations and routes of exposure, determines which risk assessments should be done to assure that the public is adequately protected from any pesticide exposure scenario. Both short and long durations of exposure are always considered. Typically, risk assessments include ''acute'', ''short-term'', ''intermediate term'', and ''chronic'' risks. These assessments are defined by the Agency as follows.

Acute risk, by the Agency's definition, results from 1-day consumption of food and water, and reflects toxicity which could be expressed following a single oral exposure to the pesticide residues. High end exposure to food and water residues are typically assumed.

Short-term risk results from exposure to the pesticide for a period of 1-7 days, and therefore overlaps with the acute risk assessment. Historically, this risk assessment was intended to address primarily dermal and inhalation exposure which could result, for example, from residential pesticide applications. Since enaction of FQPA, this assessment has been expanded. The assessment will only be performed when there are primary dermal and inhalation exposures that result from residential exposures lasting from 1-7 days. However, the analysis will now address both dietary and non-dietary

sources of exposure, and will typically consider exposure from food, water, and residential uses when reliable data are available. In a short term assessment, risks from average food and water exposure, and high-end residential exposure, are aggregated. High-end exposures from all 3 sources are not typically added because of the very low probability of this occurring in most cases, and because the other conservative assumptions built into the assessment assure adequate protection of public health. However, for cases in which high-end exposure can reasonably be expected from multiple sources (e.g. frequent and widespread homeowner use in a specific geographical area), multiple high-end risks will be aggregated and presented as part of the comprehensive risk assessment/characterization. Since the toxicological endpoint considered in this assessment reflects exposure over a period of at least 7 days, an additional degree of conservatism is built into the assessment; i.e., the risk assessment nominally covers 1-7 days exposure, and the toxicological endpoint/NOEL is selected to be adequate for at least 7 days of exposure. (Toxicity results at lower levels when the dosing duration is increased.)

Intermediate-term risk results from exposure for 7 days to several months. This assessment is handled in a manner similar to the short-term risk assessment.

Chronic risk assessment describes risk which could result from several months to a lifetime of exposure. For this assessment, risks are aggregated considering average exposure from all sources for representative population subgroups including infants and children.

B. Aggregate Exposure

In examining aggregate exposure, FFDCA section 408 requires that EPA take into account available and reliable information concerning exposure from the pesticide residue in the food in question, residues in other foods for which there are tolerances, residues in groundwater or surface water that is consumed as drinking water, and other non-occupational exposures through pesticide use in gardens, lawns, or buildings (residential and other indoor uses). Dietary exposure to residues of a pesticide in a food commodity are estimated by multiplying the average daily consumption of the food forms of that commodity by the tolerance level or the anticipated pesticide residue level. The Theoretical Maximum Residue Contribution (TMRC) is an estimate of the level of residues consumed daily if each food item contained pesticide residues equal to the tolerance. In evaluating food exposures, EPA takes into account varying consumption patterns of major identifiable subgroups of consumers, including infants and children. The TMRC is a ''worst case'' estimate since it is based on the assumptions that food contains pesticide residues at the tolerance level and that 100% of the crop is treated by pesticides that have established tolerances. If the TMRC exceeds the RfD or poses a lifetime cancer risk that is greater than approximately one in a million, EPA attempts to derive a more accurate exposure estimate for the pesticide by evaluating additional types of information (anticipated residue data and/or percent of crop treated data) which show, generally, that pesticide residues in most foods when they are eaten are well below established tolerances.

Percent of crop treated estimates for thiodicarb used in this tolerance assessment are derived from federal and private market survey data. EPA considers these data reliable. A range of estimates are supplied by this data and the upper end of this range is used for the exposure assessment. By using this upper end estimate of percent of crop treated, the Agency is reasonably certain that exposure is not understated for any significant subpopulation. Further, regional consumption information is taken into account through EPA's computer-based model for evaluating the exposure of significant subpopulations, including several regional groups, to pesticide residues. Review of this regional data allows EPA to be reasonably certain that no regional population is exposed to residue levels higher than those estimated by the Agency. To provide for the periodic evaluation of these estimates of percent crop treated, EPA will issue a data call-in under section 408(f) to all thiodicarb registrants for data on percent crop treated. That data call-in will require such data to be submitted every 5 years as long as the tolerances remain in force. For this pesticide, the most highly exposed population subgroup (non-nursing infants <1 year old) for the methomyl aggregate chronic assessment was not regionally based.

Section 408(b)(2)(E) of the FFDCA allows the Agency to rely on anticipated or actual residue levels in establishing a tolerance, provided that the Agency requires that data be provided 5 years after the establishment of the tolerance, and thereafter as the Agency deems appropriate, demonstrating that the residue levels are not above the levels relied upon. In establishing these tolerances for thiodicarb, the Agency relied upon Monte Carlo simulations which relied upon anticipated or actual residue levels. In addition, one of the chronic assessments performed by Novigen also utilized anticipated or actual residue levels. Accordingly, the Agency will require the submission of data pursuant to section 408(f)(1) of the FFDCA so that the Agency can determine 5 years from the date these tolerances are established whether thiodicarb residues on food are below the levels relied upon in establishing these tolerances.

II. Aggregate Risk Assessment and Determination of Safety

Consistent with section 408(b)(2)(D), EPA has reviewed the available scientific data and other relevant information in support of this action, EPA has sufficient data to assess the hazards of thiodicarb and its metabolite methomyl and to make a determination on aggregate exposure, consistent with section 408(b)(2), for a tolerance for combined residues of thiodicarb and its metabolite methomyl on broccoli at 7 ppm, cabbage at 7 ppm, cauliflower at 7 ppm, and leafy vegetables (except Brassica vegetables) at 35 ppm. EPA's assessment of the dietary exposures and risks associated with establishing the tolerance follows.

Chemically, each thiodicarb molecule is made up of two methomyl molecules joined by a sulfur atom. Plant metabolism studies show that thiodicarb is metabolized to methomyl, methomyl oxime, acetonitrile, and carbon dioxide. A ruminant animal metabolism study shows that thiodicarb is metabolized in steps to methomyl, methomyl oxime, acetonitrile, acetamide, acetic acid, and carbon dioxide. The breakdown to methomyl occurs more rapidly in plants and the environment than in animals. EPA has determined that residues of acetamide, acetonitrile, methomyl oxime, acetic acid, and carbon dioxide resulting from the application of thiodicarb or methomyl are not residues of concern in animals and will not be regulated. The only residues of concern in plants and animals are thiodicarb and its primary metabolite methomyl. However, methomyl residues may result from the application of either thiodicarb or methomyl products. The following discussion addresses:

1. The toxicological properties of thiodicarb.

2. The toxicological properties of methomyl.

3. A food exposure and risk analysis for thiodicarb.

4. A drinking water exposure and risk analysis for methomyl (resulting from use of either thiodicarb or methomyl).

5. An aggregate (i.e. food + drinking water) exposure and risk analysis for methomyl (resulting from use of either thiodicarb or methomyl).

There are no registered non-dietary (residential or non-occupational) uses of thiodicarb. Therefore, there is no non-dietary exposure or risk associated with thiodicarb.

A. Toxicological Profile

EPA has evaluated the available toxicity data and considered its validity, completeness, and reliability as well as the relationship of the results of the studies to human risk. EPA has also considered available information concerning the variability of the sensitivities of major identifiable subgroups of consumers, including infants and children. The nature of the toxic effects caused by thiodicarb and its metabolite methomyl are discussed below.

1. *Toxicological profile of technical thiodicarb*— i. *Acute toxicity*. In several acute oral toxicity studies with rats, the LD_{50} ranged from 46.5 mg/kg for males and 39.1 mg/kg for females, which is Toxicity Category I, to 398 mg/kg for males and 248 mg/kg for females, which is Toxicity Category II (MRID 00025791, 00115604, 00115607). In a mouse study, the LD_{50} was 73 mg/kg in males and 79 mg/kg in females (MRID 43784501).

The LD_{50} in an acute dermal toxicity study with rabbits was found to be greater than 2,000 mg/kg. This is Toxicity Category III (MRID 44025501).

In an acute inhalation toxicity study with rats, the LC_{50} for males was 0.126 mg/L, for females 0.115 mg/L, and greater than 0.32 mg/L for dust. These results are all considered to be in Toxicity Category II (MRIDs 00041432 and 00045467.

Thiodicarb is a Toxicity Category III primary eye irritant in rabbits. Instillation resulted in slight irritation (MRID 44025502).

Thiodicarb is a Toxicity Category IV primary dermal irritant in rabbits (MRID 44025503) and thiodicarb induced a weak dermal sensitization reaction in guinea pigs (MRIDs 41891004 and 43373201).

An acute delayed neurotoxicity study with thiodicarb in atropine-pretreated hens, using a dose level of 660 mg/kg (LD_{50}) was negative (MRIDs 00044961 and 00053253). No data are available on the acute and subchronic neurotoxicity of thiodicarb.

ii. *Subchronic toxicity*. In a subchronic toxicity study, Fisher 344 (COBS CD F/Crl BR) rats, 10/sex/group, were administered thiodicarb (97% a.i.) via the diet at dose levels of 1, 3, 10, and 30 mg/kg/day for 13 weeks. The NOEL was 3 mg/kg/day, and the Lowest Observed Effect Level (LOEL) was 10 mg/kg/day, based on decreased body-weight gain, decreased red blood cell (RBC) cholinesterase activity, and decreased hemoglobin (MRID 00044965).

In a subchronic feeding study in Beagle dogs, thiodicarb was administered via the diet at dose levels of 0, 15, 45, and 90 mg/kg/day for 13 weeks. The high dose was lowered to 76 mg/kg/day in females after day 36 due to the deaths of 2 high-dose females. The NOEL was 15 mg/kg/day, and the LOEL was 45 mg/kg/day, based on decreased RBC parameters (RBCs, hematocrit and hemoglobin) in both sexes (MRID 00044966).

In another subchronic toxicity study in dogs, thiodicarb was administered via the diet at dose levels of 0, 5, 15, and 45 mg/kg/day for 6 months. The NOEL was 15 mg/kg/day, and the LOEL was 45 mg/kg/day, based on liver effects of increased SGPT and increased liver weight (MRID 00079474).

In a 21-day dermal toxicity study, New Zealand White rabbits were administered thiodicarb via the skin at dose levels of 1,000, 2,000, and 4,000 mg/kg/day for 6 hours a day, 5 days a week for 3 weeks. The NOEL was 1,000 mg/kg/day, and the LOEL was 2,000 mg/kg/day, based on macrocytic anemia, erythema, and edema (MRIDs 00043737 and 00044967).

In a 16-day dermal toxicity study, New Zealand white rabbits were administered thiodicarb via the skin at dose levels of 1,000 and 4,000 mg/kg for 6 hours a day, 5 days a week for 3 consecutive weeks. The NOEL was 1,000 mg/kg/day, and the LOEL was 4,000 mg/kg/day, based on decreased erythrocytes, decreased hemoglobin, and decreased body weight (MRID 00043738).

In a 9-day dust inhalation study, Sprague-Dawley rats were administered thiodicarb particulates via the inhalation route at dose levels of 0, 4.8, 17.7, and 59.5 mg/m^3 for males, and 0, 4.8, 19.6, and 54.0 mg/m^3 for females (mean measured atmospheric concentrations) for 6 hours a day for 9 days. The NOEL was not determined. At 4.8 mg/m^3, two clinical signs typically associated with cholinesterase effects (pinpoint pupils and tremors) were observed in both sexes. There were no significant body-weight effects at this dose level in either sex, and no statistically significant effects were observed in any cholinesterase measurement (plasma, RBC, and brain) at 4.8 or 17.7/19.6 mg/m^3 in either sex (MRIDs 00045467 and 00053252).

In a 4-week feeding study, CD-1 mice of both sexes were administered thiodicarb via the diet at dose levels of; males 0, 6.2, 346, 734, and 1538 mg/kg/day, females 0, 8.3, 491, 954, and 2030 mg/kg/day for 4 weeks. The NOEL was 6.2 and 8.3 mg/kg/day for males and females respectively. The LOEL was 346 and 491 mg/kg/day for males and females respectively. These results are based on increased liver weight in females and increased spleen weight in both sexes (MRID 43611701).

In a subchronic feeding study, male and female Fischer 344 rats were administered thiodicarb via the diet at dose levels of 0, 1, 3, 10, and 30 mg/kg/day for 28 days. The NOEL for effects on cholinesterase activity was 10 mg/kg/day, and the LOEL was 30 mg/kg/day, based on decreased plasma and RBC cholinesterase activity (MRID 00098292).

iii. *Chronic toxicity and carcinogenicity*. Beagle dogs were administered technical thiodicarb via the diet at dose levels of 0, 164 (male 4.4/female 4.5 mg/kg/day), 487 (male 12.8/female 13.8 mg/kg/day), and 1506 (male 38.3/female 39.5 mg/kg/day) ppm for one year. The NOEL is male 4.4/female 4.5 mg/kg/day, and the LOEL is male 12.8/female 13.8 mg/kg/day, based on cholinesterase inhibition. The systemic NOEL is male 12.8/female 13.8 mg/kg/day and the systemic LOEL is male 38.3/female 39.5 mg/kg/day, based on reduced hematology parameters including erythrocytes, hemoglobin, and hematocrit (MRID 00159813).

In a chronic toxicity/carcinogenicity study, Sprague-Dawley rats of both sexes were administered thiodicarb via the diet at dose levels of 0 ppm, 60 ppm (male 3.3/female 4.5 mg/kg/day), 200 ppm (male 12/female 15 mg/kg), and 900 ppm (male 60/female 80 mg/kg) for 104 weeks. The systemic NOEL was 60 ppm (male 3.3/female 4.5 mg/kg/day) and the LOEL was 200 ppm (male 12/female 15 mg/kg/day), based on the increased incidence of extramedullary hemopoiesis in males and decreased RBC cholinesterase in females. There were no compound-related tumors observed in the females. The high-dose males displayed an increased incidence of interstitial cell tumors in the testes compared to the concurrent control males, and the incidence was greater than the historical control also (MRIDs 43308201, 43405001, 43596401).

In a carcinogenicity study, Charles River CD-1 mice of both sexes were administered thiodicarb via the diet at dose levels of 0, 5, 70, and 1,000 mg/kg/day for 97 weeks. The NOEL was 70 mg/

kg/day, and the LOEL was 1,000 mg/kg/day, based on increased mortality in females, decreased body-weight gain in males, decreased hemoglobin, hematocrit, and erythrocytes, increased alanine aminotransferase and total bilirubin, increased liver and spleen weights, and increased incidences of kidney, liver, and spleen lesions. In this study, the administration of thiodicarb in the diet to CD-1 mice resulted in increased incidences of hepatocellular tumors in both sexes. In both male and female mice, there were statistically significant increases in hepatocellular adenomas, carcinomas and combined adenomas/carcinomas at the highest dose (1,000 mg/kg/day); there were also statistically significant positive dose-related trends for adenomas and carcinomas, alone and combined. The incidence of adenomas and carcinomas at the highest dose exceeded that of historical controls in both sexes; in addition, in male mice, the incidence of adenomas at the mid-dose (70 mg/kg/day) exceeded that of historical controls (MRIDs 43000501 and 43619301).

In another carcinogenicity study, Charles River CH:COBS CD-L (ICR)BR mice of both sexes were administered thiodicarb via the diet at dose levels of 1, 3, and 10 mg/kg/day for 104 weeks. The NOEL was 3 mg/kg/day, and the LOEL was 10 mg/kg/day, based on mortality to thiodicarb in females (MRID 00041407).

Thiodicarb is classified as a B2 - probable human carcinogen by the Cancer Peer Review Committee (CPRC). The B2 classification was based on statistically significant increases in hepatocellular adenomas, carcinomas, and combined adenoma/carcinoma in both sexes of the CD-1 mouse and statistically significant increases in testicular interstitial cell tumors in male Sprague-Dawley rats.

iv. *Developmental toxicity*. In a rat developmental toxicity study, pregnant Charles River CD COBS rats were administered thiodicarb via gavage on gestation days 6-19 at dose levels of 0 (vehicle 0.5% methocel), 10, 20, and 30 mg thiodicarb/kg body weight/day. In another rat developmental toxicity study, pregnant Fisher 344 rats were dosed via the diet on (a) gestation days 6 to 15 or (b) gestation days 0-20 at dose levels of 0.5, 1.0, 3.0, and 100 mg thiodicarb (>99%)/kg body weight/day. When these two studies are considered together, the maternal toxicity NOEL is 10 mg/kg/day, and the maternal toxicity LOEL is 20 mg/kg/day, based on clinical signs (tremors, inactivity). The developmental toxicity NOEL is 3 mg/kg/day, and the LOEL is 10 mg/kg/day, based on decreased fetal body weights and increased incidence of litters and fetuses with developmental variations which included unossification of sternebrae #5 and/or #6 and other sternebrae (MRIDs 00043739, 00043740, 00043741, 00053254, 00053255, 00053256).

In a developmental toxicity study, artificially-inseminated New Zealand white rabbits were administered thiodicarb via gavage on gestation days 6 through 19 at dose levels of 0 (vehicle, 0.5% aqueous methylcellulose), 5, 20, and 40 mg/kg/day. The maternal toxicity NOEL was 20 mg/kg/day, and the maternal toxicity LOEL was 40 mg/kg/day, based on reduced body-weight gain and food consumption. The developmental toxicity NOEL was 40 mg/kg/day, the highest dose tested (MRIDs 00159814, 40280001).

In a developmental toxicity study, Charles River CD-1 mice were administered thiodicarb on gestation days 6 through 16 via gavage at dose levels of 0 (vehicle 0.5% methocel), 50, 100, and 200 mg Thiodicarb/kg body weight/day. The maternal toxicity NOEL was 100 mg/kg/day, and the maternal toxicity LOEL was 200 mg/kg/day, based on increased mortality. The developmental toxicity NOEL was 200 mg/kg/day, the highest dose tested (MRIDs 00043742, 00043743, 00053257, 00053258).

v. *Reproductive toxicity*. In a two-generation reproduction study, Crl:CD BR/VAF/Plus rats were fed doses of 0, 5, 15, and 45 mg/kg/day of thiodicarb. The reproductive/developmental toxicity NOEL is 5 mg/kg/day, and the reproductive/developmental toxicity LOEL is 15 mg/kg/day, based on decreased fetal body weight and viability. The systemic NOEL is 5 mg/kg/day and the systemic LOEL is 15 mg/kg/day, based on decreased body weight/gain and food consumption in both sexes (MRIDs 42381301, 42381302, 42735101).

vi. *Mutagenicity*. Thiodicarb did not induce a mutagenic response in the Ames assay, with or without metabolic activation (MRIDs 00044872, 00135792). Thiodicarb induced dose-related increased mutant frequencies in mouse lymphoma TK +/− cells, with and without metabolic activation and is considered to have an equivocal weak effect in the mouse lymphoma forward mutation assay (MRID 00151574). Thiodicarb, with or without metabolic activation, did not cause a clastogenic response in the chromosomes of Chinese hamster ovary cells (MRID 00151572). Thiodicarb is considered inactive in the primary rat hepatocyte unscheduled DNA synthesis assay (MRID 00151573).

2. *Toxicological profile of technical methomyl*— i. *Acute toxicity*. The acute oral LD_{50} values for methomyl with rats were 34 and 30 mg/kg in males and females, respectively (Toxicity Category I). Clinical signs observed in all treatment groups of both sexes included tremors, low posture and salivation (MRID 42140101).

The dermal LD_{50} value for methomyl in rabbits was greater than 2000 mg/kg (Toxicity Category III) for both sexes (MRID 42074602).

The acute inhalation LC_{50} for methomyl was 0.258 mg/L in rats for both sexes (Toxicity Category II), based on a four-hour exposure (nose only) to technical grade methomyl aerosol (MRID 42140102).

Methomyl is highly toxic via ocular exposure. In a primary eye irritation study, a female rabbit treated with 15 mg of technical methomyl (92.4%) died 20 minutes after the treatment with typical cholinergic symptoms indicative of neurotoxicity. Animals treated with 10 mg of methomyl exhibited similar clinical signs of neurotoxicity but survived. At this dose, corneal opacity and iritis were observed at 1 hour after the treatment and completely reversed by 7 days (MRID 41964001).

Another primary eye irritation study in rabbits using 30.5% methomyl formulation showed corneal opacity and conjunctivitis from 7 to 14 days in washed and unwashed eyes, respectively. Primary eye irritation for methomyl was considered to be in the Toxicity Category I (MRID 00053407).

A primary dermal irritation study with technical methomyl in rabbits showed no erythema or edema placing methomyl in Toxicity Category IV (MRID 42074603).

A dermal sensitization study in guinea pigs using technical methomyl showed that the compound is not a skin sensitizer (MRID 42074605).

ii. *Subchronic toxicity*. In a 90-day feeding study in rats, Charles River CD rats (10/sex/group) were fed methomyl at dietary levels of 0, 10, 50 and 250 ppm (equivalent to 0, 0.5, 2.5 and 12.5 mg/kg/day, respectively, based on the standard conversion ratio) for 13 weeks. An additional group received 125 ppm (6.25 mg/kg/day) of the test material for 6 weeks and 500 ppm (25 mg/kg/day) for the remaining 7 weeks. Treatment did not cause increased mortalities. No inhibition of cholinesterase activity was observed in any treated group. The NOEL is 125 ppm (6.25 mg/kg/day) and the LOEL is 250 ppm (12.5 mg/kg/day) based on inhibited body weight gain in both sexes and erythroid hyperplasia in the bone marrow of males (MRID 00007190).

In a 21-day dermal toxicity study, New Zealand White rabbits were dermally exposed to methomyl (98.35%, a.i.) for 21 days at dose levels of 0, 5, 50 or 500 mg/kg/day. Clinical signs included hyperactivity (increased reaction to stimuli-noise) at the high-dose (both sexes). At Day 21, mid- and high-dose males and high-dose females displayed significantly lower plasma cholinesterase (ChE) activity. Mean RBC ChE activity was also decreased, but only slightly, at the high-dose (both sexes). Brain ChE activity was significantly decreased at the high-dose (both sexes). At the mid-dose, although not statistically significant, inhibition of brain ChE activity was indicated (3/5 males and 4/5 females exhibited brain ChE inhibition when compared with controls). The NOEL for systemic toxicity is 5 mg/kg/day and the LOEL is 50 mg/kg/day based on brain and plasma ChE inhibitions. No dermal irritation was observed (MRID 41251501).

iii. *Chronic toxicity and carcinogenicity*. Sufficient data are available to assess the chronic toxicity and carcinogenic potential of methomyl. Methomyl has been classified as a ''Group E'', i.e. the chemical is not likely to be carcinogenic to humans via relevant routes of exposure (HED/RfD/Peer Review Report, October 25, 1996).

Combined chronic toxicity and carcinogenicity study in rats. Charles River CD rats (80/sex/group) were fed diets containing methomyl (99+%) for 2 years at dose levels of 0, 50, 100 and 400 ppm (0, 2.5, 5.0 and 20.0 mg/kg/day, respectively, based on the standard conversion ratio). No significant toxicity was observed. The NOEL is 100 ppm (5 mg/kg/day) and the LOEL is 400 ppm (20 mg/kg/day) based on depressed body weight gain. Methomyl was not considered carcinogenic because there was no evidence that the test material increased the incidence of any neoplastic lesion. Although the HED/RfD Review Committee accepted the study, the Committee determined that the animals could have tolerated higher doses than the highest dose level used (MRID 00078361).

Chronic toxicity study in dogs (2-year). Beagle dogs (4/sex/group) were fed diets containing methomyl (90%) at dose levels of 0, 50, 100, 400 and 1,000 ppm (0, 1.25, 2.5, 10, and 25 mg/kg/day, respectively, based on the standard conversion ratio) for 24 months. Two males at the 1,000 ppm group exhibited tremors, salivation, incoordination, and circling movements during the 13th week of the study. One female in the 1,000 ppm group died in the 9th week of the study. A replaced dog exhibited repeated convulsive seizures after 17 days of dosing and died on day 18. There were no significant differences among treatment and the control groups for RBC and plasma ChE activities which were measured at week 9 and week 13 (high dose only) of the study. The NOEL is 100 ppm (2.5 mg/kg/day) and the LOEL is 400 ppm (10.0 mg/kg/day) based on histopathological effects in kidneys manifested as swollen/irregular epithelial cells of the proximal convoluted tubules as well as an increase in the amount of pigment in the cytoplasm of these cells (MRID 00007091).

Carcinogenicity study in mice. CD-1 mice (80/sex/group) were fed diets containing methomyl (99+%) initially at levels of 0, 50, 100 and 800 ppm (0, 7.5, 15 and 120 mg/kg/day, respectively, based on the standard conversion ratio). Due to increased mortality, the high dose level was decreased to 400 ppm at week 28; further, the high and mid dose levels were reduced to 200 and 75 ppm, respectively, at week 39 for the same reason. These levels (50, 75 and 200 ppm) were maintained for the remainder of the 104 week treatment period. The highest dose level tested in this study was considered to be adequate for carcinogenicity testing based on increased mortality. The treatment did not alter the spontaneous tumor profile in this strain of mice under the test conditions (MRID 00078423).

Other carcinogenic issues. It should be noted that methomyl is a metabolite of and is structurally-related to thiodicarb, a pesticide that was classified as a B2 carcinogen. In addition, acetamide, a metabolite of methomyl, has been evaluated by the HED/CPRC and classified as a Group C carcinogen, possible human carcinogen. However, after a thorough investigation, the HED/RfD Review Committee concluded that the ingestion of anticipated levels of methomyl and acetamide in the diet should not represent a significant carcinogenic hazard to the consuming public based on the following:

1. The conversion rate of methomyl to acetamide is low, approximately 2-3 percent, therefore, residue levels of acetamide in edible meat should be low.

2. Carcinogenicity studies with methomyl in two rodent species indicated no increase in any type of tumor under the test conditions.

3. The product is comprised of 98.7 percent syn-isomer and 0.092 percent anti-isomer, syn-isomer must be converted to anti-isomer before acetamide is formed.

4. Acetamide induced liver tumors in rats only when administered at very high dosages, i.e. more than 1,000 mg/kg/day. (HED/RfD/Peer Review Report, October 25, 1996).

iv. *Developmental toxicity*. Methomyl (99 - 100%) was administered to 25 presumed pregnant Charles River-CD (ChR-CD) rats/group in the diet at concentrations of 0, 50, 100 and 400 ppm (0, 4.9, 9.4 and 33.9 mg/kg/day) on gestation days 6 through 16. The data did not reveal any apparent developmental toxicity. The NOEL for maternal toxicity is 100 ppm (9.4 mg/kg/day) and the LOEL is 400 ppm (33.9 mg/kg/day) based on decreased body weight gain and food consumption during gestation. The NOEL for developmental toxicity is 400 ppm (33.9 mg/kg/day) (MRID 00008621).

Methomyl (98.7%) was administered via stomach tube to 20 presumed pregnant New Zealand white (DLI:NZW) rabbits per group (19 in the high-dose group) at dosages of 0, 2, 6 and 16 mg/kg/day on gestation days 7 through 19. Clinical signs indicated neurotoxic effects in high-dose rabbits. There was no evidence of developmental toxicity in this study. The NOEL for developmental toxicity is 16 mg/kg/day. The NOEL for maternal toxicity is 6 mg/kg/day and the LOEL is 16 mg/kg/day based on mortalities and clinical signs (MRID 00131257).

v. *Reproductive toxicity*. Sprague-Dawley rats in the F_0 parental generation were fed methomyl at dose levels of 0, 75, 600 or 1,200 ppm (0, 3.75, 30, or 60 mg/kg/day, respectively, based on the standard conversion ratio). The F_1 offspring were treated at the same dosages. There was a dose-related increase in clinical signs involving the nervous system during the first few weeks of the study and the incidence of alopecia was increased in the 600 and 1,200 ppm group animals. The NOEL for systemic toxicity is 75 ppm (3.75 mg/kg/day) and the LOEL is 600 ppm (30 mg/kg/day) based on decreased body weight and food consumption and altered hematology parameters. The NOEL for reproductive toxicity is 75 ppm (3.75 mg/kg/day) and the LOEL is 600 ppm (30 mg/kg/day) based on decreases in both the mean number of live pups and mean body weights of offspring (MRID 43250701).

vi. *Mutagenicityy*. Sufficient data are available to satisfy data requirements for mutagenicity testing. Technical methomyl did not induce a genotoxic response in any of the tests listed below.

Gene mutation. In a Chinese hamster ovary (CHO) cells HGPRT forward gene mutation assay, methomyl was negative up to cytotoxic levels (≥40 mM = 6.5

mg/mL -S9; ≥150 μM = 0.24 mg/mL +S9) (MRID 00161887).

Chromosomal aberration assay. In a mouse micronucleus assay, methomyl was negative in ICR mice up to an overtly toxic dose (12 mg/kg) administered once by oral gavage. There was no evidence of a cytotoxic effect on the target tissue (MRID 44047703). An in vivo bone marrow cytogenetic assay indicated that the test was negative in Sprague Dawley rats up to an overtly toxic level (20 mg/kg) administered once by oral gavage. Target tissue cytotoxicity was not observed (MRID 00161888).

Other genotoxic effects. Methomyl was found to be inactive in a series of EPA-sponsored mutagenicity studies which included: *Salmonella typhimurium /Escherichia coli* reverse gene mutation assays, DNA damage studies in bacteria, yeast and human lung fibroblasts, and a Drosophila melanogaster sex-linked recessive lethal assay (MRID 00124901).

vii. *Neurotoxicity studies*. An acute delayed neurotoxicity study with methomyl in atropine-pretreated hens, using the LD_{50} dose (28 mg/kg) as well as higher doses, was negative (MRID 00008827).

No data are available on the acute and subchronic neurotoxicity of methomyl in mammals. Since methomyl is a carbamate and neurotoxic signs have been observed in two species (dogs and rabbits) by two different exposure routes (oral and dermal, respectively), acute and subchronic neurotoxicity studies are needed for a thorough investigation of this parameter. A neurotoxicity screening battery (acute and subchronic) is required to support the re-registration of this chemical.

B. Toxicological Endpoints

1. *Acute toxicity*— i. *Thiodicarb*. For acute dietary exposure (1 day) the developmental NOEL of 3 mg/kg/day from a developmental toxicity study in the rat is the endpoint to be used for risk assessment for females 13+ years. This is based on skeletal variations and decreases in pup body weights at 10 mg/kg/day. For the overall U.S. population, and all other subgroups, the maternal NOEL of 10 mg/kg/day is the endpoint to be used for risk assessment. This is based on the clinical signs of tremors and inactivity at 20 mg/kg/day (LOEL).

For thiodicarb, EPA has decided that an MOE equal to or greater than 100 is considered to be protective. Although there is a data gap (acute neurotoxicity study), EPA has determined that this is simply a confirmatory study. Other than this study, the database is complete. While tremors and inactivity were observed in one developmental study, other instances of neurotoxic behavior have not been observed in the remaining studies.

ii. *Methomyl*. For acute dietary exposure (1 day) deaths in dams on days 1-3 after dosing at 16 mg/kg/day (LOEL) from a developmental toxicity study in rabbits (MRID# 00131257) was selected as the endpoint for risk assessment. The maternal NOEL of 6 mg/kg/day will be used for risk assessment.

For methomyl, EPA has decided that an MOE equal to or greater than 300 is considered protective. For calculating the MOE, an extra safety factor of 3 will be used in addition to the usual 100 due to the lack of acute and subchronic neurotoxicity studies (data gaps) as well as the severity of effects (death in 1-3 days) seen at the 16 mg/kg/day dose. Unlike thiodicarb, the two neurotoxicity studies on methomyl are critical data gaps based on the fact that neurotoxicity has been demonstrated in animals studies in two species (dog, rabbit) and by both the oral and dermal routes of exposure. Because of the effects observed, exposure to all population subgroups are of concern.

2. *Short - and intermediate - term toxicity*. While endpoints for short- and intermediate- term dermal and inhalation exposures have been identified they are not discussed here as they will not be used in this tolerance assessment. Short- and intermediate-term risk analysis is conducted when there may be primary dermal and inhalation exposure which could result, for example, from residential pesticide applications. Since there are no residential uses of thiodicarb EPA believes that there is no exposure and therefore no short - and intermediate - term risk (regardless of toxicity).

3. *Chronic toxicity*— i. *Thiodicarb*. EPA has established the RfD for thiodicarb at 0.03 milligrams/kilogram/day (mg/kg/day). This RfD is based on a chronic rat toxicity study with a NOEL of 3.3 mg/kg/day for males and 4.5 mg/kg/day for females. The LOEL was 12 mg/kg/day for males and 15 mg/kg/day for females, based on the increased incidence of extramedullary hemopoiesis in males and decreased RBC cholinesterase in females. (MRID 43308201). An uncertainty factor (UF) of 100 was applied to account for intraspecies variability and interspecies extrapolation.

ii. *Methomyl*. EPA has established the RfD for methomyl at 0.008 milligrams/kilogram/day (mg/kg/day). This RfD is based on a two-year feeding study in dogs (MRID# 00007091) with a NOEL of 2.5 mg/kg/day. The LOEL was 10 mg/kg/day based on histopathological effects in kidney. An uncertainty factor (UF) of 100 was applied to account for both inter-species extrapolation and intra-species variability. An extra safety factor of 3 was applied in addition to the 100 due to the lack of acute and subchronic neurotoxicity studies (data gaps).

4. *Carcinogenicity*— i. *Thiodicarb*. The Health Effects Division Carcinogenicity Peer Review Committee (CPRC) classified thiodicarb as Group B2 - probable human carcinogen (document dated June 10, 1996).

The B2 classification was based on statistically significant increases in hepatocellular adenomas, carcinomas, and combined adenoma/carcinoma in both sexes of the CD-1 mouse at 1,000 mg/kg/day and statistically significant increases in testicular interstitial cell tumors in male Sprague-Dawley rats at 60 mg/kg/day.

The CPRC recommended that a non-linear methodology (MOE) be applied for the estimation of human risk, with the point of departure set at the 5 mg/kg/day dose, the lowest dose tested in the mouse carcinogenicity study, based on the hepatocellular combined adenoma/carcinoma in male mice.

The CPRC felt it was inappropriate to apply a linear low-dose extrapolation to the animal data because the increased incidences of tumors were statistically significant only at the highest dose in both species; in the case of the mice, the highest tested dose (1,000 mg/kg/day) is the limit dose for a carcinogenicity study and it may have been excessive. In addition, there was no evidence of genotoxicity.

ii. *Methomyl*. The Health Effects Division Carcinogenicity Peer Review Committee classified methomyl as Group E - the chemical is not likely to be carcinogenic to humans via relevant routes of exposure (document dated October 25, 1996).

C. Exposures and Risks

1. *From food and feed uses*. Tolerances have been established (40 CFR 180.407) for the combined residues of thiodicarb and its metabolite methomyl, in or on a variety of raw agricultural commodities. Thiodicarb has tolerances on sweet corn (2.0 ppm), cottonseed (0.4 ppm), and soybeans (0.2 ppm). Methomyl has tolerances on numerous crops ranging from 0.1 to 10 ppm. There are no tolerances on meat, milk, poultry, or eggs. Risk assessments were conducted by EPA to assess dietary exposures and risks from thiodicarb as follows:

i. *Acute exposure and risk*. Acute dietary risk assessments are performed for a food-use pesticide if a toxicological

study has indicated the possibility of an effect of concern occurring as a result of a one day or single exposure.

To estimate acute dietary exposure for thiodicarb, the registrant conducted Monte Carlo simulations for the overall U.S. population, women 13 years and older, children 1 to 6 years of age, and infants. These analyses included residues from field trial studies, consumption data from the 1989 through 1992 USDA Continuing Survey of Food Intake by Individuals (CSFII), and information on the percentages of the crop treated.

Food consumption data from the USDA's CSFII conducted from 1989 through 1992 were used to estimate dietary exposure. The USDA provided statistical weights that permitted the data from the various years of the survey to be combined.

For the acute analysis, field trial residues were used for all crops. In compliance with the EPA's guidance document, residue distributions from field studies conducted at maximum label conditions (e.g. maximum number of applications, maximum application rate, and minimum preharvest intervals) were used for foods considered to be single-serving commodities (e.g. cabbage, broccoli, lettuce); mean field trial residues were used for blended/processed commodities (e.g. cottonseed meal, soybean oil).

Processing factors were calculated for cottonseed meal, cottonseed oil, and soybean oil. These factors were used in conjunction with the mean field trial residues to estimate residue levels in the processed commodities.

Residue values were adjusted for the percent of the crop estimated to be treated with thiodicarb. These percentages were provided by the Agency's Biological and Economic Analysis Division (BEAD). The maximum percentage reported for a particular crop was used in the acute exposure analyses. Percent crop treated information was not provided for swiss chard, parsley, cress, and endive. The percent crop treated for spinach was assumed for these crops.

Acute exposure estimates to thiodicarb were compared against the developmental NOEL of 3 mg/kg/day from a rat developmental study in which decreased pup body weight was observed. Because of the effects observed, the population subgroup of concern is women of child-bearing age. For the overall U.S. population, children 1 to 6 years of age, and infants acute exposure estimates were compared against the maternal NOEL of 10 mg/kg/day from a rat developmental study based on clinical signs of tremors and inactivity.

The MOE is a measure of how close the high end exposure comes to the NOEL (the highest dose at which no effects were observed in the laboratory test), and is calculated as the ratio of the NOEL to the exposure (NOEL/exposure = MOE). Generally, acute dietary MOEs greater than 100 tend to cause no dietary concern to the Agency when results are compared to animal-derived data. The MOEs for acute dietary exposure were calculated using the estimates at the 99.9 percentile of exposure for groups of concern. The acute exposure MOEs for the application of thiodicarb are presented below in Table 1.

TABLE 1. ACUTE EXPOSURE MOES FROM THE APPLICATION OF THIODICARB

Group of Concern	Exposure	NOEL	MOE
U.S. Population.	0.013792	10 mg/kg/day	218
Woman 13 years and older.	0.013500	3 mg/kg/day	222
Children 1 to 6.	0.022758	10 mg/kg/day	439
Infants	0.010575	10 mg/kg/day	946

The results of the acute exposure analyses indicate that there are adequate MOEs (equal to or greater than 100) for the overall U.S. population, the population subgroup of concern, women of child bearing age, as well as for the, infants and children from the application of thiodicarb.

ii. *Chronic exposure and risk*. For thiodicarb, a Dietary Risk Evaluation System (DRES) chronic exposure analysis was performed using tolerance level residues and BEAD percent crop treated information to estimate the Anticipated Residue Contribution (ARC) for the general population and 22 subgroups.

Using existing thiodicarb tolerances result in a TMRC which represents 23%, 14%, and 36% of the RfD for the U.S. general population, infants, and children (1 to 6 years old). A total of 22% of the RfD is occupied by females (13+ years, nursing) which is the highest subgroup. If more refined estimates of dietary exposure were made (i.e., use of anticipated residues) lower chronic risks would be estimated.

Even including the pending tolerances and the higher tolerance for cottonseed, chronic dietary risk from food sources is not of concern.

For thiodicarb, the Cancer Peer Review Committee recommended that a non-linear methodology (MOE) be applied for the estimation of human cancer risk. The Cancer Peer Review Committee has determined that the NOEL of 5 mg/kg/day be used as the point of departure for estimating human risk. Cancer MOEs are estimated by dividing the NOEL of 5 mg/kg/day, by the chronic exposure. The assessment was conducted for the Total U.S. Population only.

Exposure = ARC = 0.007 mg/kg/day

MOE = NOEL ÷ Exposure = 5 mg/kg/day ÷ 0.007 mg/kg/day = 714

The MOE of 714 assumes all residues to be at tolerance level. Percent crop treated information was utilized.

2. *From drinking water.* Thiodicarb breaks down rapidly in the environment to methomyl. Methomyl, the major degradate of thiodicarb, is very mobile and persists in the field for a time sufficient (field dissipation half life = 18 days) to leach into groundwater. This tendency is enhanced when soils are permeable and the water table is high.

Since thiodicarb breaks down rapidly to methomyl, EPA has estimated the exposure and risk associated with the highest methomyl residues detected in ground water monitoring studies and with the PRZM/EXAMS model numbers for surface water.

The following assumptions have been made to estimate exposure; water consumption is defined as all water obtained from the household tap that is consumed either directly as a beverage or used to prepare foods and beverages. For the adult male exposure calculation, the average adult body weight is assumed to be 70 kg, and it is assumed that the average adult consumes 2 liters of water (l)/day. For children's exposure, the average body weight is assumed to be 10 kg and the average water consumption is assumed to be 1 liter per day.

The other assumption inherent in this calculation is that water from the same source containing the same contaminant level is consumed throughout a 70-year lifetime. The second of these assumptions is extremely conservative, since most members of the U.S. population move at some time during their lifetime and do not live in the same area or drink from the same water source for a 70-year lifetime.

Exposure is calculated using the following formula for adults(males):

Exposure = (chemical concentration in µg/L in ground and/or surface water) x (10^{-3} mg/µg) ÷ (70 kg body weight) x (2L water consumed/day)

For children (1 to 6 years old), the exposure would be calculated using the following formula:

Exposure = (chemical concentration in µg/L in ground and/or surface water) x (10^{-3} mg/µg) ÷ (10 kg body weight) x (1L water consumed/day)

i. *Acute exposure and risk*. Thiodicarb breaks down rapidly in the environment to methomyl and methomyl is the pesticide that was monitored in ground water and surface water studies. The methomyl acute dietary endpoint is used for the acute dietary risk from water and is based on the maternal toxicity NOEL of 6 mg/kg/ day from the rabbit developmental toxicity study. For calculating the MOE, an extra safety factor of 3 will be used in addition to the 100 (MOE = 300) due to the lack of acute and subchronic neurotoxicity studies as well as the severity of effects seen in the rabbit developmental toxicity study.

The EPA estimate for methomyl in ground water to be used in the acute exposure analyses is 20 ppb and is based on a small-scale prospective ground water study performed by DuPont. The EFED-supplied estimate for methomyl in surface water is 30 ppb which is based on a worst-case PRZM/ EXAMS run showing a concentration of 151 ppb in an agricultural farm pond and a DuPont ecological monitoring study showing a minimum 5-8 fold dilution factor. The use of the 5-fold dilution factor in estimating the concentration in surface water thus accounts for the high end of the possible range.

a. *Adult male acute exposure*.

Methomyl exposure (highest concentration detected in ground water) = (20 µg/L) x (10^{-3} mg/µg) ÷ (70 kg body weight) x (2L day) = 5.7 x 10^{-4} mg/kg/ day.

Methomyl exposure (highest concentration modeled in surface water) = (30 µg/L) x (10^{-3} mg/µg) ÷ (70 kg body weight) x (2L day) = 8.57 x 10^{-4} mg/kg/ day.

The highest exposure number will be used for acute water risk assessment for µg/L) x (10^{-3} mg/µg) ÷ (70 kg body weight) x (2L day) = 8.57 x 10^{-4} mg/kg/ day.

b. *Children's (1 to 6 years old) acute exposure*.

Methomyl exposure (highest concentration detected in ground water) = (20 µg/L) x (10^{-3} mg/µg) ÷ (10 kg body weight) x (1L day) = 2.0 x 10^{-3}mg/kg/ day.

Methomyl exposure (highest concentration modeled in surface water) = (30 µg/L) x (10^{-3} mg/µg) ÷ (10 kg body weight) x (1L day) = 3.0 x 10^{-3} mg/kg/ day.

The highest exposure number will be used for acute water risk assessment for µg/L) x (10^{-3} mg/µg) ÷ (10 kg body weight) x (1L day) = 3.0 x 10^{-3} mg/kg/ day.

c. *Acute risk-water*.

NOEL//Exposure = MOE

Adult (male) MOE = 6 mg/kg/day ÷ acute water exposure (8.57 x 10^{-4}mg/kg/ day) = 7,001

Children's MOE = 6 mg/kg/day ÷ acute water exposure(3 x 10^{-3} mg/kg/ day) =2,000

ii. *Chronic exposure and risk*. The chronic estimated environmental concentration for methomyl is 26 ppb for surface water and 2 ppb for ground water.

a. *Adult male chronic exposure*.

Methomyl exposure (average concentration detected in ground water) = (2 µg/L) x (10^{-3} mg/µg) ÷ (70 kg body weight) x (2L day) = 5.7 x 10^{-5} mg/kg/ day.

Methomyl exposure (average concentration detected in surface water) = (26 µg/L) x (10^{-3} mg/µg) ÷ (70 kg body weight) x (2L day) = 7.4 x 10^{-4} mg/kg/ day.

The highest exposure number will be used for chronic water risk assessment = 7.4 x 10^{-4}.

b. *Children's(1 to 6 years old) chronic exposure*.

Methomyl exposure (average concentration detected in ground water) = (2 µg/L) x (10^{-3} mg/µg) ÷ (10 kg body weight) x (1L day) = 2.0 x 10^{-4} mg/kg/ day.

Methomyl exposure (average concentration modeled in surface water) = (26 µg/L) x (10^{-3} mg/µg) ÷ (10 kg body weight) x (1L day) = 2.6 x 10^{-3} mg/kg/ day.

The highest exposure number will be used for acute water risk assessment for children = 2.6 x 10^{-3}.

c. *Chronic Risk- Water*. The chronic dietary endpoint, the RfD, is 0.008 mg/ kg/day for methomyl, and is used to calculate the chronic dietary risk. The RfD was established based on a 2-year dog feeding/carcinogenicity study with a NOEL of 2.5 mg/kg/day and an uncertainty factor of 100 to account for both inter-species extrapolation and intra-species variability. An additional uncertainty factor of 3 was applied to account for the lack of acute and subchronic neurotoxicity studies.

The chronic dietary risk from ground and surface water is expressed as a percentage of the RfD through the following formula:

chronic water exposure mg/kg/day ÷ RfD mg/kg/day x 100 = % RfD

%RfD Adult (male) = 7.4 x 10^{-4} ÷ 0.008 mg/kg/day x 100 =9%RfD

%RfD Children(1 to 6 years) = 2.6 x 10^{-3} ÷ 0.008 mg/kg/day x 100 =33%RfD

3. *From non-dietary exposure*. Thiodicarb is not currently registered for any residential uses. Since there are no residential uses of thiodicarb, EPA does not believe that there will be any risk associated with non-dietary exposure.

4. *Cumulative exposure to substances with common mechanism of toxicity*. Section 408(b)(2)(D)(v) requires that, when considering whether to establish, modify, or revoke a tolerance, the Agency consider ''available information'' concerning the cumulative effects of a particular pesticide's residues and ''other substances that have a common mechanism of toxicity.'' The Agency believes that ''available information'' in this context might include not only toxicity, chemistry, and exposure data, but also scientific policies and methodologies for understanding common mechanisms of toxicity and conducting cumulative risk assessments. For most pesticides, although the Agency has some information in its files that may turn out to be helpful in eventually determining whether a pesticide shares a common mechanism of toxicity with any other substances, EPA does not at this time have the methodologies to resolve the complex scientific issues concerning common mechanism of toxicity in a meaningful way. EPA has begun a pilot process to study this issue further through the examination of particular classes of pesticides. The Agency hopes that the results of this pilot process will increase the Agency's scientific understanding of this question such that EPA will be able to develop and apply scientific principles for better determining which chemicals have a common mechanism of toxicity and evaluating the cumulative effects of such chemicals. The Agency anticipates, however, that even as its understanding of the science of common mechanisms increases, decisions on specific classes of chemicals will be heavily dependent on chemical specific data, much of which may not be presently available.

Although at present the Agency does not know how to apply the information in its files concerning common mechanism issues to most risk assessments, there are pesticides as to which the common mechanism issues can be resolved. These pesticides include pesticides that are toxicologically dissimilar to existing chemical substances (in which case the Agency can conclude that it is unlikely that a pesticide shares a common mechanism of activity with other substances) and pesticides that produce a common toxic metabolite (in which case common mechanism of activity will be assumed).

EPA does not have, at this time, available data to determine whether thiodicarb has a common mechanism of toxicity with other substances or how to include this pesticide in a cumulative risk assessment. For the purposes of this tolerance action, therefore, EPA has not assumed that thiodicarb has a common mechanism of toxicity with other substances. However, the Agency has determined that thiodicarb has a metabolite which is a registered pesticide, methomyl. Therefore, for this tolerance determination, methomyl residues resulting from applications of both thiodicarb and methomyl will be considered in a cumulative risk assessment and compared to appropriate toxicological endpoints for methomyl.

D. Aggregate Risks and Determination of Safety for U.S. Population

In examining aggregate exposure, FQPA directs EPA to take into account available information concerning exposures from pesticide residues in food and other exposures or which there is reliable information. These other exposures include drinking water and non-occupational exposures, e.g., to pesticides used in and around the home. Risk assessments for aggregate exposure consider both short-term and long-term (chronic) exposure scenarios considering the toxic effects which would likely be seen for each exposure duration.

Thiodicarb is a food use chemical. There are no residential (non-occupational) uses of thiodicarb; therefore, the considerations for aggregate exposure are those from food and drinking water.

1. *Acute risk*. The registrant provided an acute dietary Monte Carlo distributional risk assessment which combined residues of methomyl from the application of thiodicarb and residues of methomyl from the application of methomyl . The methomyl acute dietary NOEL of 6 mg/kg/day was used to calculate the MOE.

Since methomyl, rather than thiodicarb, per se is expected in ground and surface water as a result of thiodicarb applications, an acute aggregate risk from thiodicarb residues includes only risks from food. This assessment is discussed in the previous section under risk characterization for thiodicarb.

Acute exposures to methomyl residues from all sources (food and water, from thiodicarb and methomyl applications) will be aggregated and compared to the methomyl acute dietary NOEL. Using exposure estimates provided by the registrant, EPA estimated MOEs for various U.S. subpopulations based on acute effects and 24-hour intervals using a NOEL = 6 mg/kg BW/day. This includes residues from methomyl in food as a result of application of thiodicarb, from methomyl in food as a result of application of methomyl, and from methomyl in water. See Table 2.

TABLE 2. EPA-ESTIMATED MARGINS OF EXPOSURE (MOES)

Population Group percentile	Food		Food and Water Combined	
	24 hour interval		24 hour interval	
	mg/kg BW/day	MOE	mg/kg BW/day	MOE
U.S. Population				
95th	0.000349	017192	0.001206	04975
99th	0.001099	5460	0.001956	3067
99.9th	0.006577	0912	0.007434	807
Infants				
95th	0.000215	27907	0.003215	1866
99th	0.000874	6865	0.003874	1549
99.9th	0.007940	756	0.01094	548
Children 1-6 years				
95th	0.000482	12448	0.003482	1723
99th	0.002108	2846	0.005108	1175
99.9th	0.014396	417	0.017396	345

Overall, these estimates are likely to be conservative estimates of the MOE. For example, it assumes that residues, when present, are present as a result of application at the maximum permitted level and observance of the minimum PHI. No reduction as a result of transport time from farm gate to consumer is assumed to occur. Also, no further reduction of residues through washing, peeling, or cooking at the producer or consumer level is assumed to occur. EPA concludes that sufficient margins of exposure exist at various high-end percentile exposure levels of interest (e.g., 95th, 99th, and 99.9th percentile values) and that there are no acute concerns associated with potential residues of methomyl (resulting from use of either thiodicarb or methomyl) in foods or drinking water.

2. *Chronic risk*. Chronic exposures to methomyl residues from all sources (food and water, from thiodicarb and methomyl applications) will be aggregated and compared to the methomyl reference dose. Therefore aggregate chronic risk for thiodicarb residues includes only risks from food and is shown in the previous section.

Results of the chronic exposure analysis show that no single subpopulation exceeded 7% of the RfD. The two most significantly exposed subpopulations are non-nursing infants (<1 year old) and all infants with 6.5% and 5.2% of the RfD occupied, respectively. For the overall U.S. population, only 1.9% of the RfD was occupied).

The aggregated chronic exposure from methomyl in food as a result of application of thiodicarb, from methomyl in food as a result of application of methomyl, and from methomyl in water is shown in Table 3 below.

TABLE 3. CHRONIC AGGREGATE EXPOSURE

Population Subgroup	Dietary %RfD[a]	Water %RfD	Total[b]
U. S. General.	1.9	9	11
Children (1 to 6).	2.7	33	36

TABLE 3. CHRONIC AGGREGATE EXPOSURE—Continued

Population Subgroup	Dietary %RfD[a]	Water %RfD	Total[b]
Infants	6.5	33	40

[a] Dietary % RfD includes methomyl residues from application of thiodicarb and methomyl.

[b] Although the Novigen chronic analyses incorporated exposure to both food and water, water concentrations were assumed in their analyses to be 4 ppb. The Agency believes that 26 ppb is a more appropriate estimate. Therefore, chronic water exposure were calculated independently by the Agency using the 26 ppb estimate. The total exposure reflected here incorporates both of these estimates and therefore slightly overestimates the chronic risk.

3. *Short- and intermediate-term risk*. Short- and intermediate-term risk analysis is conducted when there may be primary dermal and inhalation exposure which could result, for example, from residential pesticide applications. Since there are no residential uses of thiodicarb, EPA does not believe that there will be any exposure or risk associated with non-occupational, non-water uses.

E. Aggregate Cancer Risk for U.S. Population

Thiodicarb is a Group B2 carcinogen (probable carcinogenic effects); methomyl is a Group E carcinogen (no carcinogenic effects likely). Aggregated cancer risks are equal to the risks from thiodicarb; there is no cancer risk added from methomyl.

No aggregate cancer risk assessment is required because methomyl is not a carcinogen and methomyl, rather than thiodicarb, *per se*, is expected in ground and surface water.

F. Aggregate Risks and Determination of Safety for Infants and Children

1. *Safety factor for infants and children*— i. *Thiodicarb*— a. *In general*. In assessing the potential for additional sensitivity of infants and children to residues of thiodicarb, EPA considered data from developmental toxicity studies in the rat, mice, and rabbit and a two-generation reproduction study in the rat. The developmental toxicity studies are designed to evaluate adverse effects on the developing organism resulting from pesticide exposure to the mother during prenatal development. Reproduction studies provide information relating to effects from exposure to the pesticide on the reproductive capability of mating animals and data on systemic toxicity.

FFDCA section 408 provides that EPA shall apply an additional tenfold margin of safety for infants and children in the case of threshold effects to account for pre-and post-natal toxicity and the completeness of the database unless EPA determines that a different margin of safety will be safe for infants and children. Margins of safety are incorporated into EPA risk assessments either directly through use of a MOE analysis or through using uncertainty (safety) factors in calculating a dose level that poses no appreciable risk to humans. EPA believes that reliable data support using the standard MOE and uncertainty factor (usually 100 for combined inter- and intra-species variability)) and not the additional tenfold MOE/uncertainty factor when EPA has a complete data base under existing guidelines and when the severity of the effect in infants or children or the potency or unusual toxic properties of a compound do not raise concerns regarding the adequacy of the standard MOE/safety factor.

b. *Developmental toxicity studies*. In a rat developmental toxicity study, pregnant Charles River CD COBS rats were administered thiodicarb via gavage on gestation days 6-19 at dose levels of 0 (vehicle 0.5% methocel), 10, 20, and 30 mg thiodicarb/kg body weight/day. In another rat developmental toxicity study, pregnant Fisher 344 rats were dosed via the diet on (*1*) gestation days 6 to 15 or (*2*) gestation days 0-20 at dose levels of 0.5, 1.0, 3.0, and 100 mg thiodicarb (>99%)/kg body weight/day. When these two studies are considered together, the maternal toxicity NOEL is 10 mg/kg/day, and the maternal toxicity LOEL is 20 mg/kg/day, based on clinical signs (tremors, inactivity). The developmental toxicity NOEL is 3 mg/kg/day, and the LOEL is 10 mg/kg/day, based on decreased fetal body weights and increased incidence of litters and fetuses with developmental variations which included unossification of sternebrae #5 and/or #6 and other sternebrae (MRIDs 00043739, 00043740, 00043741, 00053254, 00053255, 00053256).

In a developmental toxicity study, artificially-inseminated New Zealand white rabbits were administered thiodicarb via gavage on gestation days 6 through 19 at dose levels of 0 (vehicle, 0.5% aqueous methylcellulose), 5, 20, and 40 mg/kg/day. The maternal toxicity NOEL was 20 mg/kg/day, and the maternal toxicity LOEL was 40 mg/kg/day, based on reduced body-weight gain and food consumption. The developmental toxicity NOEL was 40 mg/kg/day, the highest dose tested (MRIDs 00159814, 40280001).

In a developmental toxicity study, Charles River CD-1 mice were administered thiodicarb on gestation days 6 through 16 via gavage at dose levels of 0 (vehicle 0.5% methocel), 50, 100, and 200 mg Thiodicarb/kg body weight/day. The maternal toxicity NOEL was 100 mg/kg/day, and the maternal toxicity LOEL was 200 mg/kg/day, based on increased mortality. The developmental toxicity NOEL was 200 mg/kg/day, the highest dose tested (MRIDs 00043742, 00043743, 00053257, 00053258).

c. *Reproductive toxicity study*. In a two-generation reproduction study, Crl:CD BR/VAF/Plus rats were fed doses of 0, 5, 15, and 45 mg/kg/day of thiodicarb. The reproductive/developmental toxicity NOEL is 5 mg/kg/day, and the reproductive/developmental toxicity LOEL is 15 mg/kg/day, based on decreased fetal body weight and viability. The systemic NOEL is 5 mg/kg/day and the systemic LOEL is 15 mg/kg/day, based on decreased body weight/gain and food consumption in both sexes (MRIDs 42381301, 42381302, 42735101).

d. *Pre- and post-natal sensitivity*. There is no evidence of additional sensitivity to offspring following pre- and/or postnatal exposure to thiodicarb. In the two-generation reproduction study in rats, reproductive/developmental effects in pups (decreased body weight and viability) were observed only at dietary levels which were toxic in the parental animals, as evidenced by decreased body weight and food consumption. In the prenatal developmental toxicity studies in mice and rabbits, no developmental toxicity was observed, even at maternally toxic doses. In rats, two prenatal developmental toxicity studies were conducted, and based on the combined results of these studies, the developmental NOEL of 3 mg/kg/day was determined. This developmental NOEL was based upon decreased fetal body weight and increased incidence of delayed ossification in the sternebrae and was lower than the maternal NOEL of 10 mg/kg/day, which was based upon clinical signs of tremors and inactivity. Although these results could indicate an additional sensitivity of offspring to prenatal exposure to thiodicarb, the results are derived from two separate studies, using two different strains of rat (Sprague-Dawley and Wistar) which could alter the fetal response to prenatal exposure. Additionally, the developmental NOEL was identified in the second prenatal study, while all other NOELs and LOELs were identified in the first study. The dose level at which the developmental NOEL was established is, in many ways, an artifact of dose selection, since the next higher

dose was 33 times greater than that which demonstrated no fetal effects. If a wide spectrum of dose levels had been selected for testing in this strain of rat, it is very possible that no indication of additional fetal sensitivity would have been observed (as they were not in the other two studies).

e. *Conclusion*. Although there is a data gap (acute neurotoxicity study), EPA has determined that this is simply a confirmatory study. Other than this study, the database is complete. While tremors and inactivity were observed in one developmental study, other instances of neurotoxic behavior have not been observed in the remaining studies. There is no evidence of increased sensitivity to infants or children. FQPA directs the Agency to utilize an additional tenfold margin of safety to protect the health of infants and children unless the Agency concludes based on reliable data that a different margin will be safe for infants and children. Based on the considerations outlined above, the Agency has concluded that there is reliable data demonstrating that an uncertainty factor of 100 is safe for infants and children and that an additional 10x margin of safety is not necessary.

ii. *Methomyl*— a. *In general*. In assessing the potential for additional sensitivity of infants and children to residues of methomyl, EPA considered data from developmental toxicity studies in the rat, mice, and rabbit and a two-generation reproduction study in the rat.

b. *Developmental toxicity studies*. Methomyl (99 - 100%) was administered to 25 presumed pregnant Charles River-CD (ChR-CD) rats/group in the diet at concentrations of 0, 50, 100 and 400 ppm (0, 4.9, 9.4 and 33.9 mg/kg/day) on gestation days 6 through 16. The data did not reveal any apparent developmental toxicity. The NOEL for maternal toxicity is 100 ppm (9.4 mg/kg/day) and the LOEL is 400 ppm (33.9 mg/kg/day) based on decreased body weight gain and food consumption during gestation. The NOEL for developmental toxicity is 400 ppm (33.9 mg/kg/day) (MRID 00008621).

Methomyl (98.7%) was administered via stomach tube to 20 presumed pregnant New Zealand white (DLI:NZW) rabbits per group (19 in the high-dose group) at dosages of 0, 2, 6 and 16 mg/kg/day on gestation days 7 through 19. Clinical signs indicated neurotoxic effects in high-dose rabbits. There was no evidence of developmental toxicity in this study. The NOEL for developmental toxicity is 16 mg/kg/day. The NOEL for maternal toxicity is 6 mg/kg/day and the LOEL is 16 mg/kg/day based on mortalities and clinical signs (MRID 00131257).

c. *Reproductive toxicity study*. Sprague-Dawley rats in the F_0 parental generation were fed methomyl at dose levels of 0, 75, 600 or 1200 ppm (0, 3.75, 30, or 60 mg/kg/day, respectively, based on the standard conversion ratio). The F_1 offspring were treated at the same dosages. There was a dose-related increase in clinical signs involving the nervous system during the first few weeks of the study and the incidence of alopecia was increased in the 600 and 1,200 ppm group animals. The NOEL for systemic toxicity is 75 ppm (3.75 mg/kg/day) and the LOEL is 600 ppm (30 mg/kg/day) based on decreased body weight and food consumption and altered hematology parameters. The NOEL for reproductive toxicity is 75 ppm (3.75 mg/kg/day) and the LOEL is 600 ppm (30 mg/kg/day) based on decreases in both the mean number of live pups and mean body weights of offspring (MRID 43250701).

d. *Pre- and post-natal sensitivity*. In the rat developmental toxicity study the maternal NOEL is less than the developmental NOEL. In the rabbit developmental toxicity study there was no evidence of developmental toxicity. In the reproductive toxicity study the systemic NOEL is equal to the reproductive NOEL.

e. *Conclusion*. For calculating the MOE, an extra safety factor of 3 will be used in addition to the usual 100 due to the lack of acute and subchronic neurotoxicity studies (data gaps) as well as the severity of effects (death in 1-3 days) seen at the 16 mg/kg/day dose. Unlike thiodicarb, the two neurotoxicity studies on methomyl are critical data gaps based on the fact that neurotoxicity has been demonstrated in animals studies in two species (dog, rabbit) and by both the oral and dermal routes of exposure.

There is no evidence of increased sensitivity to infants or children. FQPA directs the Agency to utilize an additional tenfold margin of safety to protect the health of infants and children unless the Agency concludes based on reliable data that a different margin will be safe for infants and children. Based on the considerations outlined above, the Agency has concluded that there is reliable data demonstrating that an uncertainty factor of 300 is protective of infants and children and that an additional margin of safety is not necessary. The 300 uncertainty factor is composed of the interspecies uncertainty factor of 10, the intraspecies uncertainty factor of 10, and an additional factor of 3 to compensate for the lack of acute and subchronic neurotoxicity studies as well as the severity of effects (death in 1-3 days) seen at the 16 mg/kg/day dose.

2. *Acute risk*. For thiodicarb, to estimate acute dietary exposure, the registrant conducted Monte Carlo simulations for children (1 to 6 years) and infants. Acute dietary exposure estimates at the 99.9 percentile of exposure for children (1 to 6 years) and infants resulted in MOEs of 439 and 946, respectively. The results of the acute exposure analysis indicate that there are adequate Margins of Exposure (MOEs) greater than 100 for infants and children for thiodicarb.

For methomyl, for acute aggregate risk (from methomyl in food as a result of application of thiodicarb, from methomyl in food as a result of application of methomyl, and from methomyl in water), the dietary exposure number (6.57×10^{-3}) from a Novigen Monte Carlo analysis and the acute water exposure number (8.57×10^{-4}) were combined and resulted in an aggregate exposure of 7.43×10^{-3}. When compared against the methomyl NOEL of 6 mg/kg/day the acute aggregate MOEs for children (1-6 years) and infants were 345 and 548, respectively. The results of the acute aggregate exposure analysis indicate that there are adequate MOEs greater than 300 for infants and children for methomyl.

3. *Chronic risk*. For methomyl, for chronic aggregate risk, exposures (from methomyl in food as a result of application of thiodicarb, from methomyl in food as a result of application of methomyl, and from methomyl in water) were combined and compared to the methomyl reference dose. The two most significantly exposed subpopulations are non-nursing infants (<1 year old) and children (1-6 years old) with 40% and 36% of the RfD occupied, respectively.

A thiodicarb, chronic dietary risk assessment was conducted using tolerance level residues and BEAD percent crop treated information. The chronic analysis indicates that exposure from the existing permanent and time-limited tolerances for children(1 to 6 years old) and infants, 36% and 14%, respectively, of the RfD would be consumed. Chronic dietary risk considering consumption of thiodicarb from food sources is not of concern.

4. *Short- or intermediate-term risk*. Short- and intermediate-term risk analysis is conducted when there may be primary dermal and inhalation exposure which could result, for example, from residential pesticide applications. Since there are no residential uses of thiodicarb, EPA does

not believe that there will be any exposure or risk for infants or children associated with non-occupational, non-water uses.

III. Other Considerations

A. Metabolism In Plants and Animals

The qualitative nature of the residue in plants is adequately understood based on soybean, tomato, cotton, sweet corn and peanut metabolism studies. The residues to be regulated in plants are thiodicarb and its metabolite methomyl.

The qualitative nature of the residue in animals is adequately understood based upon acceptable ruminant and poultry metabolism studies. The residues to be regulated in livestock are thiodicarb and its metabolite methomyl.

B. Analytical Enforcement Methodology

Adequate analytical methodology is available for enforcement of tolerances of thiodicarb. Method I in the Pesticide Analytical Manual (PAM), Vol. II, is a GLC/sulfur specific flame photometric detector (FPD-S) method that has undergone a successful EPA method validation. The reported limit of detection is 0.02 ppm for plant commodities.

An enforcement analytical method for livestock commodities is not necessary since there are no significant animal feed items associated with the subject crops.

C. Magnitude of Residues

Residues of thiodicarb or its metabolites are not expected to exceed 35 ppm in/on leafy vegetables (except *Brassicaa* vegetables) and 7 ppm in/on broccoli, cabbage, and cauliflower as a result of this use.

D. International Residue Limits

There are no Codex, Canadian, or Mexican tolerances for thiodicarb in/on leafy vegetables, broccoli, cabbage or cauliflower. Therefore, there are no questions with respect to compatibility of U.S. tolerances with Codex MRLs.

IV. Conclusion

Therefore, the tolerance is established for combined residues of thiodicarb and its metabolite methomyl in broccoli at 7 ppm, cabbage at 7 ppm, cauliflower at 7 ppm, and leafy vegetables (except *Brassica* vegetables) at 35 ppm.

V. Objections and Hearing Requests

The new FFDCA section 408(g) provides essentially the same process for persons to ''object'' to a tolerance regulation issued by EPA under new section 408(e) and (l)(6) as was provided in the old section 408 and in section 409. However, the period for filing objections is 60 days, rather than 30 days. EPA currently has procedural regulations which govern the submission of objections and hearing requests. These regulations will require some modification to reflect the new law. However, until those modifications can be made, EPA will continue to use those procedural regulations with appropriate adjustments to reflect the new law.

Any person may, by October 22, 1997, file written objections to any aspect of this regulation and may also request a hearing on those objections. Objections and hearing requests must be filed with the Hearing Clerk, at the address given above (40 CFR 178.20). A copy of the objections and/or hearing requests filed with the Hearing Clerk should be submitted to the OPP docket for this rulemaking. The objections submitted must specify the provisions of the regulation deemed objectionable and the grounds for the objections (40 CFR 178.25). Each objection must be accompanied by the fee prescribed by 40 CFR 180.33(i). If a hearing is requested, the objections must include a statement of the factual issues on which a hearing is requested, the requestor's contentions on such issues, and a summary of any evidence relied upon by the requestor (40 CFR 178.27). A request for a hearing will be granted if the Administrator determines that the material submitted shows the following: There is genuine and substantial issue of fact; there is a reasonable possibility that available evidence identified by the requestor would, if established, resolve one or more of such issues in favor of the requestor, taking into account uncontested claims or facts to the contrary; and resolution of the factual issues in the manner sought by the requestor would be adequate to justify the action requested (40 CFR 178.32). Information submitted in connection with an objection or hearing request may be claimed confidential by marking any part or all of that information as Confidential Business Information (CBI). Information so marked will not be disclosed except in accordance with procedures set forth in 40 CFR part 2. A copy of the information that does not contain CBI must be submitted for inclusion in the public record. Information not marked confidential may be disclosed publicly by EPA without prior notice.

VI. Public Docket

EPA has established a record for this rulemaking under docket control number [OPP–300541] (including any comments and data submitted electronically). A public version of this record, including printed, paper versions of electronic comments, which does not include any information claimed as CBI, is available for inspection from 8:30 a.m. to 4 p.m., Monday through Friday, excluding legal holidays. The public record is located in Room 1132 of the Public Information and Records Integrity Branch, Information Resources and Services Division (7506C), Office of Pesticide Programs, Environmental Protection Agency, Crystal Mall #2, 1921 Jefferson Davis Hwy., Arlington, VA.

Electronic comments may be sent directly to EPA at:

opp-docket@epamail.epa.gov.

Electronic comments must be submitted as an ASCII file avoiding the use of special characters and any form of encryption.

The official record for this rulemaking, as well as the public version, as described above will be kept in paper form. Accordingly, EPA will transfer any copies of objections and hearing requests received electronically into printed, paper form as they are received and will place the paper copies in the official rulemaking record which will also include all comments submitted directly in writing. The official rulemaking record is the paper record maintained at the Virginia address in ''ADDRESSES'' at the beginning of this document.

VII. Regulatory Assessment Requirements

This final rule establishes a tolerance under FFDCA section 408(d) in response to a petition submitted to the Agency. The Office of Management and Budget (OMB) has exempted these types of actions from review under Executive Order 12866, entitled Regulatory Planning and Review (58 FR 51735, October 4, 1993). This final rule does not contain any information collections subject to OMB approval under the Paperwork Reduction Act (PRA), 44 U.S.C. 3501 *et seq.*, or impose any enforceable duty or contain any unfunded mandate as described under Title II of the Unfunded Mandates Reform Act of 1995 (UMRA) (Pub. L. 104–4). Nor does it require any prior consultation as specified by Executive Order 12875, entitled Enhancing the Intergovernmental Partnership (58 FR 58093, October 28, 1993), or special considerations as required by Executive Order 12898, entitled Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (59 FR 7629, February 16, 1994), or require OMB review in

accordance with Executive Order 13045, entitled Protection of Children from Environmental Health Risks and Safety Risks (62 FR 19885, April 23, 1997).

In addition, since these tolerances and exemptions that are established on the basis of a petition under FFDCA section 408(d), such as the tolerance in this final rule, do not require the issuance of a proposed rule, the requirements of the Regulatory Flexibility Act (RFA) (5 U.S.C. 601 *et seq.*) do not apply. Nevertheless, the Agency has previously assessed whether establishing tolerances, exemptions from tolerances, raising tolerance levels or expanding exemptions might adversely impact small entities and concluded, as a generic matter, that there is no adverse economic impact. The factual basis for the Agency's generic certification for tolerance actions was published on May 4, 1981 (46 FR 24950) and was provided to the Chief Counsel for Advocacy of the Small Business Administration.

VIII. Submission to Congress and the General Accounting Office

Under 5 U.S.C. 801(a)(1)(A), as added by the Small Business Regulatory Enforcement Fairness Act of 1996, the Agency has submitted a report containing this rule and other required information to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the General Accounting Office prior to publication of this rule in today's **Federal Register**. This is not a ''major rule'' as defined by 5 U.S.C. 804(2).

List of Subjects in 40 CFR Parts 180 and 186

Environmental protection, Administrative practice and procedure, Agricultural commodities, Animal feeds, Pesticides and pests, Reporting and recordkeeping requirements.

Dated: August 15, 1997.

Stephen L. Johnson,

Acting Director, Registration Division, Office of Pesticide Programs.

Therefore, 40 CFR chapter I is amended as follows:

PART 180—[AMENDED]

1. In part 180:

a. The authority citation for part 180 continues to read as follows:

Authority: 21 U.S.C. 346a and 371.

b. By revising § 180.407 to read as follows:

§ 180.407 Thiodicarb; tolerances for residues.

(a) *General* . Tolerances are established for the combined residues of the insecticide thiodicarb (dimethyl *N*,*N*'-[thiobis[[(methylimino)carbonyloxy]] bis[ethanimidothioate]) and its metabolite methomyl (*S*-methyl *N*-[(methylcarbamoyl) oxy]thioacetimidate) in or on the following food commodities or groups. The time-limited tolerances expire and are revoked on the dates listed in the following table:

Commodity	Parts per million	Expiration/revocation date
Broccoli	7.0	None
Cabbage	7.0	None
Cauliflower	7.0	None
Corn, sweet grain (K + CWHR)	2.0	None
Cottonseed	0.4	None
Cottonseed hulls	0.8	None
Leafy vegetables (except *Brassica* vegetables)	35	None
Soybean hulls	0.8	None
Soybeans	0.2	None

(b) *Section 18 emergency exemptions.* [Reserved]

(c) *Tolerances with regional registrations.* [Reserved]

(d) *Indirect or inadvertent residues.* [Reserved]

PART 186—[AMENDED]

2. In part 186:

a. The authority citation for part 186 continues to read as follows:

Authority: 21 U.S.C. 342, 348, and 701.

§ 186.5650 [Removed]

b. Section 186.5650 is removed.

[FR Doc. 97–22397 Filed 8–21–97; 8:45 am]

BILLING CODE 6560–50–F

FEDERAL COMMUNICATIONS COMMISSION

47 CFR Part 73

[MM Docket No. 96–10; RM–8738, RM–8799, RM–8800, RM–8801]

Radio Broadcasting Services; Ada, Ardmore, and Comanche, OK, and Blue Ridge, Bridgeport, Eastland, Farmersville, Flower Mound, Greenville, Henderson, Jacksboro, Mineola, Mt. Enterprise, Sherman and Tatum, TX

AGENCY: Federal Communications Commission.

ACTION: Final rule; petition for reconsideration.

SUMMARY: This document dismisses a petition for reconsideration filed by Gleiser Communications, Inc. and a Joint Emergency Motion for Stay of Filing Window filed by Farmersville Radio Group, Gleiser Communications, Inc., Hunt Broadcasting, Inc. and Cowboy Broadcasting, L.L.C. The original proceeding reallotted and substituted broadcast channels or modified authorizations at Ada, Ardmore, and Comanche, Oklahoma, and Bridgeport, Eastland, Farmersville, Flower Mound, Henderson, Jacksboro, Mineola, Mt. Enterprise, Sherman, and Tatum, Texas. It also denied allotments at Blue Ridge and Greenville, Texas. See 62 FR 4660, January 31, 1997. With this action, the proceeding is terminated.

EFFECTIVE DATE: August 22, 1997.

FOR FURTHER INFORMATION CONTACT: Robert Hayne, Mass Media Bureau, (202) 418–2177.

SUPPLEMENTARY INFORMATION: This is a synopsis of the Commission's Memorandum Opinion and Order in MM Docket No. 96–10, adopted August 6, 1997, and released August 15, 1997. The full text of this decision is available for inspection and copying during normal business hours in the FCC Reference Center (Room 239), 1919 M Street, NW, Washington, DC. The