7-29-95
PP# 4369

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JUN 29 1995

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

MEMORANDUM:

SUBJECT: **PP#4F4369/4H5701; ID#000524-00445**. Glyphosate in/on Genetically-engineered Soybeans. Evaluation of Residue Data and Analytical Methodology.

CBTS#'s: 13910, 13911, 13912, 14218, 14219, 14220.

DP Barcodes: D204800, D204796, D204798, D206640, D206641, D206642.

MRID#'s: 433306-00, 433306-01, 432604-00, 432604-01, 432604-02, 432604-03.

FROM: José J. Morales, Chemist
Tolerance Petition Section II
Chemistry Branch I -- Tolerance Support
Health Effects Division (7509C)

José J. Morales 6/27/95

THROUGH: Michael Metzger, Chief
Chemistry Branch I -- Tolerance Support
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TO: Robert J. Taylor, PM 25
Fungicide-Herbicide Branch
Registration Division (7505C)
and
Jane Smith, Acting Section Head
Registration Section
Risk Characterization and Analysis Branch
Health Effects Division (7509C)

Monsanto Company, in a letter dated May 27, 1994, submitted an application to register Roundup® herbicide (EPA Reg. No. 524-445) and Roundup® D-Pak (EPA Reg. No. 524-333) for use over-the-top of soybeans that contain the Roundup Ready® gene. Soybeans

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Monsanto Company, in a letter dated May 27, 1994, submitted an application to register Roundup® herbicide (EPA Reg. No. 524-445) and Roundup® D-Pak (EPA Reg. No. 524-333) for use over-the-top of soybeans that contain the Roundup Ready® gene. Soybeans

containing the Roundup Ready® gene have been genetically modified to provide tolerance to the non-selective herbicide glyphosate, which is the active ingredient in Roundup®. Also, the registrant is requesting the establishment of tolerances for residues of the herbicide glyphosate [N-(phosphonomethyl-glycine)] resulting from the application of the isopropylamine salt of glyphosate and/or the monoammonium salt of glyphosate in/on soybean, forage at 100 ppm and soybean, aspirated grain fractions at 50 ppm.

BACKGROUND:

Glyphosate is a non-selective herbicide registered for use on many food and non-food crops as well as non-crop areas. It is also used as a plant growth regulator. Three salts of glyphosate are used as active ingredients in registered pesticide products. The isopropylamine salt, subject of this petition, is used as a herbicide to control broadleaf weeds and grasses. It is formulated as a liquid, solid or pellet/tablet, and is applied using ground or aerial equipment. The sodium salt is used as a growth regulator. The monoammonium salt, used as herbicide and growth regulator, was registered after November 1984 and is not subject to re-registration.

Roundup® herbicide is a concentrated aqueous formulation which contains 41% glyphosate in the form of its isopropylamine salt. Due to its broad spectrum herbicidal activity, in-crop applications of Roundup® herbicide are limited. Roundup® herbicide is registered in the United States for application as an in-crop spot treatment to soybeans prior to initial pod set and as a preharvest treatment to soybeans 7 days prior to harvest. In addition, Roundup® herbicide is registered for in-crop applications to soybeans using the following equipment: recirculating sprayers, shielded applicators, and wiper applicators.

Roundup® D-Pak herbicide is a concentrated aqueous formulation which contains 62% glyphosate in the form of its isopropylamine salt. Due to its broad spectrum herbicidal activity, in-crop applications of Roundup® D-Pak herbicide are limited. Roundup® D-Pak herbicide is registered in the United States for application as an in-crop spot treatment to soybeans prior to initial pod set and as a preharvest treatment to soybeans 7 days prior to harvest. In addition, Roundup® herbicide is registered for in-crop applications to soybeans using the following equipment: recirculating sprayers, shielded applicators, and wiper applicators.

Glyphosate controls weeds due to inhibition of the enzyme 5-enolpyruvyl-shikimate-3-phosphate synthase (EPSPS). EPSPS is an enzyme of the shikimate pathway for aromatic amino acid biosynthesis in plants. Monsanto Company has developed soybeans genetically modified to express a glyphosate-tolerant EPSPS from Agrobacterium, sp. strain CP4 (CP4 EPSPS). CP4 EPSPS has a significant higher K_i for glyphosate than plant EPSPS, and therefore has a significantly decreased sensitivity to glyphosate at the site of herbicidal action. Soybeans genetically modified to express CP4 EPSPS are tolerant to Roundup® herbicide at application rates that exceed 2.25 lbs. ae/A.

According to 40 CFR §180.364 (a), there are existing tolerances for the combined residues of glyphosate and its metabolite AMPA in/on several raw agricultural commodities, including soybean, straw at 200 ppm; soybeans at 20 ppm; and soybeans, forage and hay at 15 ppm. According to 40 CFR §180.364 (b), there are existing tolerances for the combined residues of glyphosate and its metabolite AMPA in/on the kidney and liver of cattle, goats, hogs, horses, poultry, and sheep at 0.50 ppm; fish at 0.25 ppm; and shellfish at 3 ppm.

A feed additive tolerance was established under 40 CFR §186.3500 for the combined residues of glyphosate and AMPA in/on soybean, hulls at 100 ppm.

The Glyphosate Re-registration Eligibility Decision (RED) Document has recommended that the 200 ppm tolerance for soybean straw be revoked, since this is not a rac anymore according to Table II, Subdivision O, and that the tolerance for soybean hay be changed from 15 ppm to 200 ppm to cover dessicant use.

A conditional registration was granted for use of glyphosate in/on soybeans (S. Johnson memo of 5/22/95). The petitioner has agreed, in order to satisfy this conditional registration, to send residue data on soybean forage and grain dust, and to include a livestock feeding and grazing restriction on the label, which would preclude the possibility of additional residues from the proposed uses on forage.

No residue data were sent for soybean grain, hay, and hulls. The petitioner stated that residue level in these commodities will be within the currently established tolerances.

The HED Metabolism Committee has determined that AMPA does not need to be regulated and should be dropped from the tolerance expression in the future (R. Perfetti, 8-19-1992, Memorandum to the HED Metabolism Committee). Consequently, the Residue Chemistry Chapter of the RED Document explains that AMPA no longer needs to be regulated and that it will be dropped from the tolerance expression.

Glyphosate is a List A chemical, Case #0718, for which a RED Document was issued in September 1993 (Cover letter dated February 16, 1994 from D. Barolo). A Registration Standard was issued in June 1986. The Glyphosate Product and Residue Chemistry Re-registration Standard Update was completed on April 26, 1990.

CONCLUSIONS

1a. Additional pertinent Product Chemistry data requirements are still outstanding for unregistered trisodium salt technical, the 94% isopropylamine (IPA) Formulation Intermediate (FI), and the 75% IPA FI.

1b. The registrant must either certify that the suppliers of beginning materials and manufacturing processes for the glyphosate technical products and manufacturing-use products (MPs) have not changed since the last comprehensive Product Chemistry or submit a complete updated Product Chemistry data package.

1c. For the purposes of this petition in or on soybeans, resolution of these Product Chemistry deficiencies (1a & 1b) can be satisfied as part of the re-registration process.

2. The nature of the residue of glyphosate in or on plants and animals has been adequately delineated and is considered to be understood. For the purposes of the proposed tolerance in or on soybeans, the residue of concern in plants is glyphosate *per se*.

3a. Adequate analytical methods are available for residue data collection and enforcement of the proposed tolerances of glyphosate in or on soybeans. These methods include GLC and HPLC with fluorometric detection.

3b. The FDA Pestrack data base [Pesticide Analytical Manual (PAM) I, Appendix, dated November 6, 1990] indicates that recoveries are not likely for glyphosate under FDA Multiresidue Methods.

4. Geographical representation of residue data is adequate for the proposed use on soybeans.

5. CBTS concludes that, based on the submitted residue data, the established tolerances for glyphosate residues in/on soybean seed at 20 ppm and soybean hay at 200 ppm will not be exceeded from the proposed use. The proposed 100 ppm tolerance for glyphosate residues in/on soybean forage seems adequate. However, since the established tolerances in 40 CFR §180.364 (a) are for the combined residues of glyphosate and its metabolite AMPA, and the Agency no longer regulates AMPA, a revised Section F should be submitted by the petitioner proposing tolerances for residues of glyphosate, *per se*, in the following soybean racs:

soybean, grain	20 ppm
soybean, hay	200 ppm

The submitted Section F for soybean forage proposed a 100 ppm tolerance for residues of glyphosate, *per se*.

6. Whole soybean seeds containing 2.4 ppm glyphosate residues yielded hulls containing 9.21 ppm, which is a concentration factor of 3.8X. Applying this concentration factor to the established tolerance of 20 ppm for soybean seeds results in 76 ppm. Residues in coarse dust were 5.525 ppm, which is a concentration factor of 2.3X. Applying

this concentration factor to the established tolerance of 20 ppm for soybean seeds results in 46 ppm. These results showed that the established tolerance on hulls will not be exceeded from the proposed use. The proposed tolerance of 50 ppm for soybean aspirated fractions seems adequate. However, since the established tolerances in §186.3500 (a) are for the combined residues of glyphosate and its metabolite AMPA, and the Agency no longer regulates AMPA, a revised Section F should be submitted by the petitioner proposing a feed additive tolerance for residues of glyphosate, *per se*, in the following soybean processed commodity:

soybean, hulls	100 ppm

The submitted Section F for soybean, aspirated grain fractions proposed a 50 ppm tolerance for residues of glyphosate, *per se*.

7. CBTS expect no increase in the dietary burden of poultry and ruminants as a result of this use. Therefore, CBTS anticipates that any secondary residues that might result in animal commodities would be covered by the established tolerances on these commodities.

RECOMMENDATION

TOX considerations permitting, CBTS can recommend for the following tolerances for residues of glyphosate, *per se*,:

soybeans	20 ppm
soybean forage	100 ppm
soybean hay	200 ppm
soybean aspirated grain fractions	50 ppm
soybean hulls	100 ppm

A revised Section F proposing these tolerances for glyphosate only should be submitted.

We further note that the existing tolerances for glyphosate plus AMPA on soybeans and soybean forage, hay, and straw should be revoked. The bean, forage, and hay tolerances will be replaced by tolerances for glyphosate only.

DETAILED CONSIDERATIONS

PRODUCT CHEMISTRY

As noted in the Product and Residue Chemistry Chapter of the Re-registration Eligibility Decision (RED) Document (R. Perfetti, 10-27-1992), all pertinent data requirements have been satisfied for the unregistered isopropylamine (IPA) acid technical and the 62% IPA Formulation Intermediate (FI). Additional pertinent data requirements are still outstanding for unregistered trisodium salt technical, the 94% IPA FI, and the 75% IPA FI. It was also concluded in the RED Document that the registrant must either certify that the suppliers of beginning materials and manufacturing processes for the glyphosate technical products and manufacturing-use products (Mps) have not changed since the last comprehensive Product Chemistry or submit a complete updated Product Chemistry data package.

PROPOSED USE

A supplemental label was submitted for review.

The proposed Roundup® Herbicide (EPA Reg. No. 524-445) concentrated aqueous formulation contains 41.0% glyphosate in the form of its isopropylamine salt. This formulation contains 480 grams per liter or 4 pounds per gallon of the isopropylamine salt of glyphosate (the active ingredient), which is equivalent to 356 grams per liter or 3 pounds per gallon of the free acid (ae), glyphosate.

The product may be used only over the top of improved soybean varieties that are designated as soybeans with the Roundup Ready® gene. Severe injury or death of soybeans will result if any soybean varieties not designated as having the Roundup Ready® gene are sprayed with this product. Avoid contact with foliage, green stems, or fruit crops, or any desirable plants or trees, other than soybeans with the Roundup Ready® gene, since sever injury or destruction will result.

Roundup® herbicide may be applied postemergence to Roundup® Ready soybeans from the cracking stage through the full flowering stage. Single and repeat in-crop applications of this product are not to exceed 2 quarts (1.5 lbs. ae) per acre per growing season. Preharvest applications (14 days prior to harvest) are not to exceed 1 quart (0.75 lbs. ae) per acre. Total Roundup® use should not exceed 8 quarts (6 lbs.ae) per acre per year. The maximum yearly rates allowed are provided in the following Table.

Maximum Yearly Rates Allowed for Roundup® Herbicide

Combined total per year for all applications	8 quarts (6 lbs. ae)/A
Preplant, Preemergence applications	5 quarts (3.75 lbs. ae)/A
Total of single or multiple in-crop applications from cracking to flowering	2 quarts (1.5 lbs. ae)/A
Maximum preharvest rate	1 quart (0.75 lbs. ae)/A

Applications may be made following pre-plant, stale seedbed, post-plant burndown, or on conventionally tilled seedbeds. There are no rotational crop restrictions following applications of this product. For ground application use the recommended rates of this product in 5 to 20 gallons of spray per acre as a broadcast spray. For aerial applications use the recommended rates of this product in 3 to 15 gallons of spray solution per acre. Do not exceed 1 quart of formulation per acre.

For annual weeds, apply from 12 (0.281 lbs. ae) to 48 (1.125 lbs. ae) fluid ounces per acre. The rates vary depending on the weed. For those rates less than 64 fluid ounces (1.5 lbs. ae) per acre, this product may be used up to 64 fluid ounces per acre for annual weeds, where heavy densities exist. The combined total of all postemergence treatments (not including preharvest) must not exceed 64 fluid ounces (1.5 lbs. ae) per acre. Use a minimum of 16 fluid ounces of this product per acres for sequential applications. For perennial weeds, apply from 16 (0.375 lbs. ae) to 64 (1.5 lbs. ae) fluid ounces per acre (single or sequential applications). This will control or burndown a wide variety of weeds.

Non-ionic surfactant use: use 0.5% surfactant concentration (2 quarts per 100 gallons of spray solution) when using surfactants which contain at least 70% active ingredient or a 1% surfactant concentration (4 quarts per 100 gallons of spray solution) for those surfactants containing less than 70% active ingredient.

Ammonium sulfate may be mixed with this product for applications to Roundup® Ready® soybeans.

The proposed Roundup® D-Pak Herbicide (EPA Reg No. 524-333) concentrated aqueous formulation contains 62.0% glyphosate in the form of its isopropylamine salt. This formulation contains 769 grams per liter or 6.42 pounds per gallon of the isopropylamine salt of glyphosate (the active ingredient), which is equivalent to 570 grams per liter or 4.75 pounds per gallon of the free acid (ae), glyphosate.

The product may be used only over the top of improved soybean varieties that are designated as soybeans with the Roundup Ready® gene. Severe injury or death of soybeans will result if any soybean varieties not designated as having the Roundup Ready® gene are

sprayed with this product. Avoid contact with foliage, green stems, or fruit crops, or any desirable plants or trees, other than soybeans with the Roundup Ready® gene, since sever injury or destruction will result.

The product may be applied postemergence to Roundup Ready® soybeans from the cracking stage through the full flowering stage. Single and repeat in-crop applications of this product are not to exceed 1.25 quarts (1.5 lbs. ae) per acre per growing season. Preharvest applications (14 days prior to harvest) are not to exceed 0.625 quarts (0.75 lbs. ae) per acre. Total product use should not exceed 5 quarts (6 lbs. ae) per acre per year. The maximum yearly rates allowed are provided in the following Table.

Maximum Yearly Rates Allowed for Roundup® D-Pak Herbicide

Combined total per year for all applications	5 quarts (6 lbs. ae)/A
Preplant, Preemergence applications	3 quarts (3.56 lbs. ae)/A
Total of single or multiple in-crop applications from cracking to flowering	1.25 quarts (1.5 lbs. ae)/A
Maximum preharvest rate	0.625 quart (0.75 lbs. ae)/A

Applications may be made following pre-plant, stale seedbed, post-plant burndown, or on conventionally tilled seedbeds. There are no rotational crop restrictions following applications of this product. For ground application use the recommended rates of this product in 5 to 20 gallons of spray per acre as a broadcast spray. For aerial applications use the recommended rates of this product in 3 to 15 gallons of spray solution per acre. Do not exceed 1 quart of formulation per acre.

For annual weeds, apply from 10 (0.371 lbs. ae) to 30 (1.1 lbs. ae) fluid ounces per acre. The rates vary depending on the weed. For those rates less than 40 fluid ounces (1.5 lbs. ae) per acre, this product may be used up to 40 fluid ounces per acre for annual weeds, where heavy weed densities exist. The combined total of all postemergence treatments (not including preharvest) must not exceed 40 fluid ounces (1.5 lbs. ae) per acre. Use a minimum of 10 fluid ounces (0.37 lbs. ae) of this product per acre for sequential applications. For perennial weeds, apply from 20 (0.75 lbs. ae) to 40 (1.5 lbs. ae) fluid ounces per acre (single or sequential applications). This will control or burndown a wide variety of weeds.

Non-ionic surfactant use: use 0.5% surfactant concentration (2 quarts per 100 gallons of spray solution) when using surfactants which contain at least 70% active ingredient or a 1% surfactant concentration (4 quarts per 100 gallons of spray solution) for those surfactants containing less than 70% active ingredient.

Ammonium sulfate may be mixed with this product for applications to Roundup® Ready® soybeans.

CBTS concludes that the proposed use of Roundup® Herbicide in or on soybeans was adequately described.

NATURE OF THE RESIDUE

Plants

Plant metabolism studies for glyphosate were not submitted with this petition.

Studies have been performed on several plants including corn, cotton, soybeans, and wheat. Results indicate that uptake of glyphosate or AMPA from soil is limited but that residues which are taken up are readily translocated. Foliarly applied glyphosate is readily absorbed and translocated through apples, coffee, dwarf citrus, grapes, and pears. Metabolism occurs via N-methylation and ultimately yields N-methylated glycines and phosphonic acids. The ratio of glyphosate to AMPA is 9 to 1 but can approach 1 to 1 in a few cases. Most of the residue data for crops reflect residues ranging from 0.05 to 0.15 ppm along with a non-detectable (<0.05 ppm) amount of AMPA. The terminal residue to be regulated is glyphosate *per se*. (R.B. Perfetti, Product and Residue Chemistry Chapter of the RED Document, 10-27-1992)

The nature of the residue of glyphosate in or on plants has been adequately delineated and is considered to be understood. For the purposes of the proposed tolerance in or on soybeans, the residue of concern in plants is glyphosate *per se*.

Animals

Animal metabolism studies for glyphosate were not submitted with this petition.

Studies involving lactating goats and laying hens fed a mixture of glyphosate and AMPA indicate that the primary route of elimination was by excretion (urine and feces) and that the results are consistent with the metabolism studies in rats, rabbits, and cows. The terminal residues in eggs, milk, and animal tissues are glyphosate and AMPA. The terminal residue to be regulated is glyphosate *per se*. (R.B. Perfetti, Product and Residue Chemistry Chapter of the RED Document, 10-27-1992)

The nature of the residue of glyphosate in or on animals has been adequately delineated and is considered to be understood. The residue of concern in animals from this proposed use, is glyphosate *per se*.

ANALYTICAL METHODOLOGY

Adequate enforcement methods are available for analysis of residues of glyphosate and AMPA in or on plant commodities. These methods include GLC (Method I in Pesticides Analytical Manual (PAM) II; the limit of detection is 0.05 ppm) and HPLC with fluorometric detection. Use of the GLC method is being discouraged due to lengthiness of the experimental procedure. The HPLC method has undergone successful Agency validation and was recommended for inclusion in PAM II; the limit of detection is 0.0005 ppm.

The method used in the submitted study consisted of the extraction of glyphosate and AMPA residues from the plant residues with dilute hydrochloric acid. The extract solution was eluted through a resin in the Fe(III) form, which retained glyphosate and AMPA by chelation. The iron salts were removed by elution with 6 N HCl. The isolated glyphosate and AMPA iron salts were then applied to a strong anion exchange resin and eluted with 6 N HCl to remove the iron and obtain the free acids of glyphosate and AMPA. After concentration to dryness, the samples were redissolved in water and analyzed by HPLC with fluorometric detection.

For the 1992 trials, the method used in the submitted study was validated for glyphosate and AMPA concentrations over a range of 0.05 to 250 ppm in soybean forage, 0.10 to 60 ppm in soybean hay, and 0.01 to 10 ppm in soybean seed. Glyphosate recoveries from fortified soybean forage, hay, and seed averaged 85.4%, 85.6%, and 92.3%, and ranged from 58% to 119.7%, 72.5% to 110.5%, and 70.6% to 112.6%, respectively. AMPA recoveries from fortified soybean forage, hay, and seed averaged 83.5%, 85.1%, and 91.4%, and ranged from 59.6% to 116.5%, 73.9% to 111.6%, and 70.5% to 115.8%, respectively. Submitted chromatograms show well resolved peaks in support of this data.

For the 1993 trials, the method used in the submitted study was validated for glyphosate and AMPA concentrations over a range of 0.05 to 100 ppm in soybean forage, 0.05 to 50 ppm in soybean hay, and 0.05 to 10 ppm in soybean seed. Glyphosate recoveries from fortified soybean forage, hay, and seed averaged 84%, 97.8%, and 87.9%, and ranged from 71.4% to 104.9%, 64.2% to 118.2%, and 70.9% to 106.6%, respectively. AMPA recoveries from fortified soybean forage, hay, and seed averaged 83.3%, 100.9%, and 92.8%, and ranged from 71.3% to 106.1%, 65.9% to 120.5%, and 71.8% to 109.7%, respectively. Submitted chromatograms show well resolved peaks in support of this data.

The processing part of the study was validated for glyphosate and AMPA concentrations over a range of 0.05 to 20 ppm in soybean seed, 0.05 to 8 ppm in soybean coarse dust, 0.05 to 5 ppm in medium dust, 0.05 to 3 ppm in fine dust, 0.05 to 10 ppm in hulls, 0.05 to 15 ppm in meal, 0.05 to 5 ppm in crude oil, 0.05 to 5 ppm in refined oil, and 0.05 to 5 ppm in soapstock. Glyphosate recoveries for fortified seed, coarse dust, medium dust, fine dust, hulls, meal, crude oil, refined oil, and soapstock averaged 90.7%, 93.8%, 100.8%, 92.6%, 95.9%, 88.7%, 81.3%, 82.6%, and 83.9%, and ranged from 80.9 to

101.9%, 88.9% to 98.7%, 91.9% to 109.7%, 91.3% to 93.9%, 82.4% to 111.1%, 74.5% to 99.4%, 72.2% to 90.6%, 74.3% to 87.6%, and 75.3% to 95.4%, respectively.

For enforcement of tolerances in or on animal commodities, an HPLC method with fluorescence detector is available; the reported limits of detection are 0.01 ppm for glyphosate and 0.012 ppm for AMPA. (R.B. Perfetti, Product and Residue Chemistry Chapter of the RED Document, 10-27-1992).

Adequate analytical methods are available for residue data collection and enforcement of the proposed tolerances of glyphosate in or on soybeans.

The FDA Pestrack data base [Pesticide Analytical Manual (PAM) I, Appendix, dated November 6, 1990] indicates that recoveries are not likely for glyphosate under FDA Multiresidue Methods.

STORAGE STABILITY DATA:

As noted in the Product and Residue Chemistry Chapter of the RED Document (R. Perfetti, 10-27-1992), available storage stability data indicate that residues of glyphosate and AMPA are stable under frozen (-20 °C) storage conditions for a period of 1 year in or on plant commodities and for 2 years in animal commodities.

The soybean forage, hay, and seed samples were maintained in frozen storage for periods up to 12, 11, and 6 months between harvest and extraction, respectively. Soybean processed samples were mantained in frozen storage for up to 3 months between processing and extraction.

Storage conditions used during this study are covered adequately under the available storage stability data.

RESIDUE DATA

1992 Field Trials

Residue data reflecting application of glyphosate to soybeans appear in the following report:

> "Magnitude of Glyphosate Residues in Soybean Raw Agricultural Commodities (1992)"; J. R. Steinmetz and W. F. Goure; 5/94; Performing Laboratory was The Agricultural Group of Monsanto Company, St. Louis, MO (MRID# 432604-01).

Twenty one field trials on soybeans were conducted in 1992. The field trials were conducted in AR (2), IN (2), IA (2), MO (2), GA (1), IL (1), KS (1), KY (1), LA (1), MI (1), MS (1), NE (1), NC (1), OH (1), SC (1), TN (1), and VA (1). According to Agricultural Statistics, 1991, these states represent nearly 82% of the soybean production in the U.S. At each test site, Roundup® herbicide was applied to all treated plots as a preemergence treatment at an application rate of 5.7 lbs. ae/A. In addition to the preemergence application, separate treated test plots at each test site received the following postemergence applications of Roundup® herbicide: 1) a 0.56 lbs. ae/A early postemergence application; 2) a 0.75 lbs. ae/A late postemergence application; 3) a 1.50 lbs. ae/A late postemergence application; 4) sequential early followed by late postemergence treatments at applications rates of 0.75 lbs. ae/A each; and 5) sequential early followed by late postemergence treatments plus a preharvest treatment at application rates of 0.75 lbs. ae/A each. The preemergence treatment was a conventional application that was made after planting but prior to crop emergence. The early postemergence treatment was a topical application that was made approximately 40 days after planting. The late postemergence treatment was a topical application that was made at approximately the time of the formation of the first flower buds. The preharvest treatment was a topical application made approximately 10 to 14 days prior to harvest. All applications were ground, broadcast spray applications. Forage samples were collected approximately six to eight weeks after planting. Hay samples were randomly collected when soybeans were at the R3 to R7 growth stage. Following cutting, hay samples were allowed to dry for one to seven days before they were harvested. Seed samples were collected at normal harvest. After collection, samples were frozen and shipped to the Agricultural Group of Monsanto Company to determine glyphosate and AMPA levels in soybean racs.

CBTS concludes that geographic representation of residue data is adequate for the proposed use on soybeans.

Residue levels in ppm, for glyphosate *per se*, found in soybean forage, hay, and seed for the 1992 field trials are summarized in the following tables:

Table I. Glyphosate Residues in Soybean Forage, Hay, and Seed Following Application of Roundup® Herbicide at the Rates of 5.7 lbs. ae/A Preemergence Application, 0.75 lbs. ae/A Late Postemergence Application, and 1.5 lbs. ae/A Late Postemergence Application

Field Trial Location	Treatment[1]	PHI	Glyphosate Residues (ppm)
Forage			
SC	II	5[2]	15.993, 20.801

Field Trial Location	Treatment[1]	PHI	Glyphosate Residues (ppm)
VA	II	2	8.999, 8.852
NC	II	2	31.021, 27.692
MS	II	6	19.008, 16.557
TN	II	1	39.487, 38.304
KY	II	7	7.443, 6.871
IN	II	6	27.275, 29.188
AR	II	6	11.234, 10.799
LA	II	10	4.323, 4.880
IL	II	7	12.045, 11.508
IN	II	6	9.468, 10.150
AR	II	12	10.157, 13.356
GA	II	14	4.275, 3.892
MO	I	55[3]	0.119, 0.119
	II	55	2.415, 1.906
MI	I	49	0.110, 0.105
	II	49	0.073, 0.065

Field Trial Location	Treatment[1]	PHI	Glyphosate Residues (ppm)
IA	I	56	0.007
	II	56	ND
OH	I	56	0.057, 0.036
	II	56	0.040, 0.034
KS	I	50	0.126, 0.128
	II	50	0.113, 0.116
IA	I	58	0.046, 0.048
	II	58	0.072, 0.074
NE	I	56	ND
	II	56	ND
Hay			
MO	II	51[4]	7.453, 7.046
MI	II	33	12.929, 14.680
IA	II	42	11.642, 12.657
SC	II	38	7.903, 8.169
VA	II	71	0.976, 0.898
NC	II	40	10.362, 10.360
MS	II	47	1.330, 1.345

Field Trial Location	Treatment[1]	PHI	Glyphosate Residues (ppm)
TN	II	43	8.410, 8.939
KY	II	71	1.173, 1.200
IN	II	62	3.997, 4.017
OH	II	69	0.061, 0.062
AR	II	35	6.155, 6.965
LA	II	39	2.821, 2.861
IL	II	71	4.886, 5.817
KS	II	51	8.926, 8.525
IN	II	63	1.708, 1.410
AR	II	32	11.041, 10.947
MO	II	72	7.486, 7.010
IA	II	60	3.133, 3.088
GA	II	46	2.818, 2.686
NE	II	60	0.979, 1.038

Field Trial Location	Treatment[1]	PHI	Glyphosate Residues (ppm)
MO	I	51	2.224, 2.495
MI	I	33	7.858, 8.526
IA	I	42	6.872, 6.979
SC	I	38	3.250, 3.912
VA	I	71	0.279, 0.337
NC	I	40	3.598, 3.237
MS	I	47	2.575, 2.560
TN	I	43	1.691, 1.737
KY	I	71	0.576, 0.600
IN	I	62	1.803, 1.885
OH	I	69	0.016, 0.050
AR	I	35	1.404, 1.490
LA	I	39	0.916, 0.967
IL	I	71	0.872, 0.868
KS	I	51	2.652, 3.162

Field Trial Location	Treatment[1]	PHI	Glyphosate Residues (ppm)
IN	I	63	0.354, 0.335
AR	I	32	3.737, 3.337
MO	I	72	2.649, 2.349
IA	I	60	1.378, 1.327
GA	I	46	1.716, 1.744
NE	I	60	0.271, 0.269
Seed			
MO	I	104[5]	1.716, 1.928
	II	104	2.592, 2.751
SC	I	97	0.502, 0.882
	II	97	2.140, 2.488
VA	I	97	0.206, 0.297
	II	97	0.948, 1.154
NC	I	89	1.236, 1.661
	II	89	4.310, 4.463
MS	I	75	0.840, 0.881
	II	75	1.687, 1.762
TN	I	81	0.661, 0.829

Field Trial Location	Treatment[1]	PHI	Glyphosate Residues (ppm)
	II	81	2.762, 3.284
KY	I	108	0.140, 0.171
	II	108	0.294, 0.322
IN	I	133	0.644, 0.701
	II	133	1.584, 1.977
OH	I	103	0.090, 0.095
	II	103	0.146, 0.174
AR	I	66	0.565, 0.547
	II	66	2.076, 2.506
LA	I	69	0.218, 0.220
	II	69	0.670, 0.692
IL	I	108	0.292, 0.342
	II	108	1.812, 1.980
KS	I	80	2.303, 2.338
	II	80	5.506, 5.592
IN	I	138	0.020, 0.016
	II	138	0.109, 0.113
AR	I	81	0.699, 0.700
	II	81	1.925

Field Trial Location	Treatment[1]	PHI	Glyphosate Residues (ppm)
MO	I	97	0.995, 1.048
	II	97	1.903, 1.982
GA	I	66	1.325, 1.363
	II	66	1.904, 1.945
NE	I	91	0.036, 0.037
	II	91	0.157, 0.161

1. I - Two sequential treatments at the following rates: 5.7 lbs. ae/A preemergence application; and 0.75 lbs. ae/A late postemergence application.

   II - Two sequential treatments at the following rates: 5.7 lbs. ae/A premergence application; and 1.50 lbs. ae/A late postemergence application.

2. The interval between late postemergence application and forage harvest.

3. The interval between the preemergence application and forage harvest.

4. The interval between late postemergence application and hay harvest.

5. The interval between late postemergence application and seed harvest.

Table II. Glyphosate Residues in Soybean Forage, Hay, and Seed Following Application of Roundup® Herbicide at the Rates of 5.7 lbs. ae/A Preemergence Application, 0.75 lbs. ae/A Late Postemergence Application, 0.75 lbs. ae/A Early Postemergence Application, and 0.75 lbs. ae/A Preharvest Application

Field Trial Location	Treatment[1]	PHI	Glyphosate Residues (ppm)
Forage			
MO	I	15[2]	0.114, 0.120
	II	15	2.254, 2.486
MI	I	9	0.894, 0.925

Field Trial Location	Treatment[1]	PHI	Glyphosate Residues (ppm)
	II	9	7.612, 8.157
IA	I	14	5.369, 5.642
	II	14	9.063, 9.240
OH	I	22	1.113, 1.406
	II	22	1.296, 1.388
KS	I	9	1.060
	II	9	0.977
IA	I	17	1.669, 1.682
	II	17	1.486, 1.551
NE	I	16	1.088, 1.133
	II	16	1.056, 1.142
SC	I	5	8.861, 9.014
	II	5	7.967, 8.361
VA	I	2	8.004, 8.377
	II	2	7.433, 7.692
NC	I	2	18.431, 22.316
	II	2	19.992, 20.279
MS	I	6	13.376, 14.017
	II	6	16.389, 19.215

Field Trial Location	Treatment[1]	PHI	Glyphosate Residues (ppm)
TN	I	1	25.000, 24.489
	II	1	30.642, 32.006
KY	I	7	3.943, 5.035
	II	7	7.736, 7.665
IN	I	6	12.074, 12.081
	II	6	11.902, 15.691
AR	I	6	12.504, 11.790
	II	6	11.027, 12.281
LA	I	10	4.633, 7.530
	II	10	5.132, 5.430
IL	I	7	1.648, 1.860
	II	7	6.820, 7.269
IN	I	6	6.225, 6.233
	II	6	6.580, 8.450
AR	I	12	8.785, 8.967
	II	12	7.905, 10.558
GA	I	14	3.682, 3.697
	II	14	3.963, 4.500
Hay			
MO	I	51[3]	3.371, 3.867
	II	51	2.916, 2.742

Field Trial Location	Treatment[1]	PHI	Glyphosate Residues (ppm)
MI	I	33	6.871, 7.021
	II	33	7.339, 6.915
IA	I	42	3.995, 4.540
	II	42	10.919, 10.051
SC	I	38	6.394, 6.562
	II	38	6.658, 6.547
VA	I	71	0.871, 0.886
	II	71	1.110, 0.944
NC	I	40	8.242, 8.584
	II	40	6.598, 6.642
MS	I	47	4.967, 5.183
	II	47	5.471, 6.235
TN	I	43	2.453, 2.574
	II	43	6.082, 5.988
KY	I	71	0.912, 0.979
	II	71	0.436, 0.609
IN	I	62	3.197, 3.685
	II	62	1.968, 2.178
OH	I	69	1.388, 1.494

Field Trial Location	Treatment[1]	PHI	Glyphosate Residues (ppm)
	II	69	1.291, 1.332
AR	I	35	5.861, 6.060
	II	35	5.381, 6.059
LA	I	39	2.863, 3.225
	II	39	2.539, 2.777
IL	I	71	0.478, 0.523
	II	71	2.060, 2.315
KS	I	51	2.875, 2.960
	II	51	3.659, 3.800
IN	I	63	1.427, 1.840
	II	63	1.309, 1.469
AR	I	32	6.833, 6.970
	II	32	8.172, 8.238
MO	I	72	1.622, 1.747
	II	72	3.907, 4.847
IA	I	60	2.041, 2.260
	II	60	1.520, 1.748
GA	I	46	1.690, 1.815
	II	46	2.094, 2.144

Field Trial Location	Treatment[1]	PHI	Glyphosate Residues (ppm)
NE	I	60	0.407, 0.424
	II	60	0.493, 0.547
Seed			
MO	I	104[4]	1.577, 1.710
	II	34[5]	1.271, 1.245
SC	I	97	2.065, 2.179
	II	10	2.621, 2.542
VA	I	97	1.380, 1.408
	II	16	1.784, 1.873
NC	I	89	2.849, 3.240
	II	13	3.123, 3.176
MS	I	75	3.225, 3.402
	II	10	1.612, 2.475
TN	I	81	1.005, 1.014
	II	13	2.523, 2.579
KY	I	108	0.134, 0.145
	II	13	0.315, 0.359
IN	I	133	1.168, 0.936
	II	53	1.806, 2.798
OH	I	103	0.125, 0.146
	II	18	1.097, 0.938

Field Trial Location	Treatment[1]	PHI	Glyphosate Residues (ppm)
AR	I	66	2.304, 2.345
	II	11	3.595, 3.642
LA	I	69	1.111, 0.933
	II	13	5.473, 5.199
IL	I	108	0.307, 0.320
	II	13	0.770, 0.908
KS	I	80	2.375, 2.509
	II	15	2.045, 2.836
IN	I	138	0.225, 0.207
	II	52	2.769, 2.981
AR	I	81	1.501
	II	13	1.805, 1.711
MO	I	97	0.567, 0.579
	II	14	2.708, 2.736
GA	I	66	1.904, 2.064
	II	10	1.990, 2.052
NE	I	91	0.084, 0.047
	II	12	3.185, 4.261

1. I - Three sequential treatments at the following rates: 5.7 lbs. ae/A preemergence application; 0.75 lbs. ae/A early postemergence application; and 0.75 lbs. ae/A late postemergence application.

II - Four sequential treatments at the following rates: 5.7 lbs. ae/A premergence application; 0.75 lbs. ae/A early postemergence application; 0.75 lbs. ae/A late postemergence application; and 0.75 lbs. ae/A preharvest application.

2. The interval between the late postemergence application and forage harvest.

3. The interval between late postemergence application and hay harvest.

4. The interval between late postemergence application and seed harvest.

5. The interval between the preharvest application and seed harvest.

As can be seen from Tables I and II, the maximum glyphosate, *per se*, residue found in soybean forage, hay, and seed were 39.487, 14.680, and 5.592, respectively. The maximum AMPA levels in soybean forage, hay, and seed were 1.534, 3.151, and 7.672 ppm, respectively.

1993 Field Trials

Residue data reflecting application of glyphosate to soybeans appear in the following report:

> "Magnitude of Glyphosate Residues in Soybean Raw Agricultural Commodities (1993)"; J. R. Steinmetz and W. F. Goure; 5/94; Performing Laboratory was The Agricultural Group of Monsanto Company, St. Louis, MO (MRID# 432604-02).

Sixteen field trials on soybeans were conducted in 1993. The field trials were conducted in IA (3), IL (2), IN (2), MN (2), OH (2), AL (1), MD (1), MI (1), MO (1), and SD (1). According to Agricultural Statistics, 1991, these states represent nearly 80% of the soybean production in the U.S. At each test site, Roundup® herbicide was applied to all treated plots as a preemergence treatment at an application rate of 5.7 lbs. ae/A. In addition to the preemergence application, separate treated test plots at each test site received the following postemergence applications of Roundup® herbicide: 1) a 0.75 lbs. ae/A late postemergence application; 2) sequential early followed by late postemergence treatments at application rates of 0.75 lbs. ae/A each; and 3) sequential early followed by late postemergence treatments plus a preharvest treatment at applications rates of 0.75 lbs. ae/A each. The preemergence treatment was a conventional application that was made after planting but prior to crop emergence. The early postemergence treatment was a topical application that was made approximately 40 days after planting. The late postemergence treatment was a topical application that was made at approximately the time of the formation of the first flower buds. The preharvest treatment was a topical application made approximately 10 to 16 days prior to harvest. All applications were ground, broadcast spray applications. Forage samples were collected approximately six to eight weeks after planting. Hay samples were randomly collected when soybeans were at the R7 growth stage.

Following cutting, hay samples were allowed to dry for two hours to eleven days before they were harvested. Seed samples were collected at normal harvest. After collection, samples were frozen and shipped to the Agricultural Group of Monsanto Company to determine glyphosate and AMPA levels in soybean racs.

CBTS concludes that geographic representation of residue data is adequate for the proposed use on soybeans.

Residue levels in ppm, for glyphosate *per se*, found in soybean forage, hay, and seed for the 1993 field trials are summarized in the following table:

Table III. Glyphosate Residues in Soybean Forage, Hay, and Seed Following Application of Roundup® Herbicide at the Rates of 5.7 lbs. ae/A Preemergence Application, 0.75 lbs. ae/A Late Postemergence Application, 0.75 lbs. ae/A Early Postemergence Application, and 0.75 lbs. ae/A Preharvest Application

Field Trial Location	Treatment[1]	PHI	Glyphosate Residues (ppm)
Forage			
IL	I	9[2]	6.880, 6.680
	II	9	5.780, 5.234
IL	I	8	2.357, 2.345
	II	8	2.303, 2.102
MI	I	6	8.290, 8.026
	II	6	8.076, 8.264
IA	I	8	1.375, 1.462
	II	8	1.474, 1.631
OH	I	13	5.647, 5.652
	II	13	4.462

Field Trial Location	Treatment[1]	PHI	Glyphosate Residues (ppm)
AL	I	0	37.159, 42.465
	II	0	72.297, 89.037
MN	I	17	2.712, 2.635
	II	17	2.670, 2.482
MN	I	11	3.527, 3.077
	II	11	2.881, 2.837
IN	I	10	3.581, 3.480
	II	10	4.187, 4.077
OH	I	9	17.165, 19.038
	II	9	4.553, 4.539
SD	I	17	3.933, 4.059
	II	17	5.234, 4.792
IA	I	15	1.746, 1.745
	II	15	1.854, 1.967
MD	I	22	2.205, 2.175
	II	22	1.593, 1.703
IN	I	20	3.120, 3.215
	II	20	2.082, 2.065
MO	I	6	2.209, 2.618
	II	6	1.608, 1.569

Field Trial Location	Treatment[1]	PHI	Glyphosate Residues (ppm)
IA	I	14	3.349, 3.515
	II	14	3.841, 4.319
IL	III	9[3]	5.855, 5.767
IL	III	8	2.465
MI	III	6	7.467, 7.878
IA	III	8	1.694, 1.507
OH	III	13	4.634, 4.405
AL	III	21	0.101, 0.110
MN	III	17	1.909, 1.809
MN	III	11	1.785, 1.903
IN	III	29	0.118, 0.121
OH	III	9	6.178, 5.987
SD	III	17	2.652, 2.639
IA	III	15	1.483, 1.435
MD	III	22	0.915, 0.867, 0.824

Field Trial Location	Treatment[1]	PHI	Glyphosate Residues (ppm)
IN	III	20	6.761, 6.150
MO	III	20	0.288, 0.332
IA	III	14	1.894, 1.705
Hay			
IL	I	44[4]	2.290, 1.941
	II	44	1.982, 2.072
IL	I	62	0.736, 0.616
	II	62	0.309
MI	I	54	1.602, 1.560
	II	54	1.963, 2.101
IA	I	62	0.199, 0.190
	II	62	0.149, 0.183
OH	I	55	2.315, 2.238
	II	55	2.356, 2.618
AL	I	59	0.939, 1.016
	II	59	1.046, 0.908
MN	I	65	0.735, 0.762
	II	65	0.335, 0.322
MN	I	41	3.963, 3.557

Field Trial Location	Treatment[1]	PHI	Glyphosate Residues (ppm)
	II	41	2.722, 3.009
IN	I	59	0.800, 0.873
	II	59	0.821, 0.851
OH	I	45	4.123, 4.142
	II	45	0.849, 0.890
SD	I	66	1.550, 1.745
	II	66	2.006, 2.078
IA	I	52	0.467, 0.556
	II	52	0.464, 0.549
MD	I	57	0.747, 0.685
	II	57	0.621, 0.629
IN	I	56	0.905, 0.998
	II	56	0.686, 0.641
MO	I	52	0.858, 0.801
	II	52	0.543, 0.532
IA	I	56	0.689, 0.812
	II	56	1.203, 0.904
IL	III	44[3]	3.775, 3.976
IL	III	62	0.591, 0.625

Field Trial Location	Treatment[1]	PHI	Glyphosate Residues (ppm)
MI	III	54	0.842, 0.816
IA	III	62	0.147, 0.148
OH	III	55	4.305, 3.800
AL	III	80	0.164, 0.145
MN	III	65	0.683, 0.613
MN	III	41	1.829, 1.629
IN	III	78	0.041, 0.048
OH	III	45	1.149, 1.094
SD	III	66	0.997, 1.052
IA	III	52	0.484, 0.423
MD	III	57	0.303, 0.293
IN	III	56	2.645, 2.682
MO	II	66	0.133, 0.113
IA	III	56	0.409, 0.464
Seed			

Field Trial Location	Treatment[1]	PHI	Glyphosate Residues (ppm)
IL	I	90[5]	1.044, 1.076
	II	12[6]	0.909, 0.951
IL	I	93	0.237
	II	16	0.158, 0.163
VA	I	94	0.502, 0.490
	II	15	1.715, 1.688
IA	I	90	0.176, 0.169
	II	12	0.354, 0.389
OH	I	90	0.523, 0.710
	II	12	0.987, 0.947
AL	I	116	0.305, 0.303
	II	14	0.423, 0.466
MN	I	95	0.518, 0.680
	II	11	0.553, 0.616
MN	I	75	3.316, 3.690
	II	12	3.120, 2.494
IN	I	91	0.570, 0.383
	II	11	0.565, 0.552
OH	I	87	1.982, 1.810
	II	10	0.556, 0.581

Field Trial Location	Treatment[1]	PHI	Glyphosate Residues (ppm)
SD	I	96	1.309, 1.474
	II	11	1.334, 1.490
IA	I	95	0.214, 0.205
	II	10	0.361, 0.484
MD	I	106	0.088, 0.107
	II	12	0.249, 0.286
IN	I	88	0.561, 0.577
	II	11	0.391, 0.478
MO	I	76	0.338, 0.328
	II	10	0.476, 0.537
IA	I	99	0.488, 0.471
	II	10	0.673
IL	III	90[3]	1.070, 1.101
IL	III	93	0.269, 0.299
MI	III	94	0.392, 0.407
IA	III	90	0.110, 0.111
OH	III	90	1.439, 1.356

Field Trial Location	Treatment[1]	PHI	Glyphosate Residues (ppm)
AL	III	106	0.353, 0.315
MN	III	95	0.432, 0.402
MN	III	75	1.632, 1.542
IN	III	86	0.040, 0.038
OH	III	87	0.541, 0.528
SD	III	96	0.926, 1.033
MD	III	106	0.059, 0.060
IN	III	88	1.539, 1.380
MO	III	90	0.052, 0.045
IA	III	99	0.259, 0.226

1. I - Three sequential treatments at the following rates: 5.7 lbs. ae/A preemergence application; 0.75 lbs. ae/A early postemergence application; and 0.75 lbs. ae/A late postemergence application.

   II - Four sequential treatments at the following rates: 5.7 lbs. ae/A premergence application; 0.75 lbs. ae/A early postemergence application; 0.75 lbs. ae/A late postemergence application; and 0.75 lbs. ae/A preharvest application.

   III - Two sequential treatments at the following rates: 5.7 lbs. ae/A preemergence application; and 0.75 lbs. ae/a late postemergence application.

2. The interval between the late postemergence application and forage harvest.

3. The interval between the postemergence application and sample harvest.

4. The interval between the late postemergence application and hay harvest.

5. The interval between the late postemergence application and seed harvest.

6. The interval between the preharvest application and seed harvest.

As can be seen from Table III, the maximum glyphosate, *per se*, residue found in soybean forage, hay, and seed were 89.037, 4.142, and 3.690, respectively. Maximum AMPA residues in soybean forage, hay, and seed were 1.258, 1.280, and 3.541 ppm, respectively.

CBTS Conclusions

CBTS concludes that, based on the submitted residue data, the established tolerances for glyphosate residues in/on soybean seed at 20 ppm and soybean hay at 200 ppm will not be exceeded from the proposed use. The proposed 100 ppm tolerance for glyphosate residues in/on soybean forage seems adequate. However, since the established tolerances in 40 CFR §180.364 (a) are for the combined residues of glyphosate and its metabolite AMPA, and the Agency no longer regulates AMPA, a revised Section F should be submitted by the petitioner proposing tolerances for residues of glyphosate, *per se*, in the following soybean racs:

soybeans	20 ppm
soybean, hay	200 ppm

The submitted Section F for soybean forage proposed a 100 ppm tolerance for residues of glyphosate, *per se*.

Therefore, TOX considerations permitting, and provided that a revised Section F proposing tolerances for residues of glyphosate, *per se*, of 20 ppm in/on soybean, grain and 200 ppm in soybean, hay are submitted, CBTS recommends that the tolerance for residues of glyphosate in/on soybean, forage at 100 ppm be established.

PROCESSED COMMODITIES

Residue data from a processing study on soybeans have been submitted in the following report:

> "Magnitude of Glyphosate Residues in Soybean Processed Fractions"; J. R. Steinmetz and W. F. Goure; 5/94; Performing Laboratory was The Agricultural Group of Monsanto Company, St. Louis, MO (MRID# 432604-03).

Soybean seed from fourteen test sites were composited to give untreated check seed and seed that contained field-treated residues of glyphosate for processing. The field trials

were conducted in AR (2), IN (2), GA (1), IL (1), KS (1), LA (1), MS (1), MO (1), NC (1), SC (1), TN (1), and VA (1). Field treated samples received two sequential applications of Roundup® herbicide at the following rates: a preemergence application at 5.7 lbs. ae/A followed by a 1.50 lbs. ae/A late postemergence application. Both applications were ground applied. Composited untreated and treated seed samples were processed, in a manner that simulated normal commercial practices, into the following: unmilled seed; dehulled seed; corase, medium and fine dust; hulls; soybean meal; crude and refined oil; and soapstock (the complete processing procedure is given on page 14 of the report). Glyphosate residues were determined using the same enforcement methodology described above. Acceptable recovery values were obtained (see Analytical Methodology section). Samples were maintained in frozen storage for up to 3 months.

Results are given in Table IV.

Table IV. Roundup® Residues in Soybean Processing Fractions

Commodity	Glyphosate Residue (ppm)	Concentration Factor
Whole Seed	2.4	--
Hulls	9.21	3.8
Meal	1.870	0.8
Crude Oil	0.039	0.02
Refined Oil	0.006	0.003
Soapstock	0.255	0.11
Coarse Dust	5.525	2.3
Medium Dust	4.093	1.7
Fine Dust	2.510	1.0

Whole soybean seeds containing 2.4 ppm yielded hulls containing 9.21 ppm, which is a concentration factor of 3.8X. Applying this concentration factor to the established tolerance of 20 ppm for soybean seeds results in 76 ppm. Residues in coarse dust were 5.525 ppm, which is a concentration factor of 2.3X. Applying this concentration factor to the proposed tolerance of 20 ppm for soybean seeds results in 46 ppm. These results showed that the established tolerance on hulls will not be exceeded from the proposed use. The proposed tolerance of 50 ppm for soybean aspirated fractions seems adequate. However, since the established tolerances in and §186.3500 (a) are for the combined residues of glyphosate and its metabolite AMPA, and the Agency no longer regulates AMPA, a revised Section F

should be submitted by the petitioner proposing tolerances for residues of glyphosate, *per se*, in the following soybean rac:

soybean, hulls	100 ppm

The submitted Section F for soybean, aspirated grain fractions proposed a 50 ppm tolerance for residues of glyphosate, *per se*.

Therefore, TOX considerations permitting, and provided that a revised Section F proposing a feed additive tolerance for residues of glyphosate, *per se*, of 100 ppm in/on soybean, hulls are submitted, CBTS recommends that the tolerance for residues of glyphosate in/on soybean, aspirated grain fractions at 50 ppm be established.

MEAT, MILK, POULTRY AND EGGS

We expect no increase in the dietary burden of poultry and ruminants as a result of this use. Therefore, CBTS anticipates that any secondary residues that might result in animal commodities would be covered by the proposed tolerances on these commodities.

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7509C: Reviewer (JJM): CM#2: Rm 804-B: 305-5010: typist (JJM): 6/21/95
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