DATA EVALUATION RECORD

STUDY 2

CHEM 129034 Flumioxazin §161-3
CAS No. 103361-09-7
FORMULATION–00–ACTIVE INGREDIENT

STUDY ID 44295038
Fathulla, R. N. 1993. Artificial sunlight photodegradation of [Phe-^{14}C]-flumioxazin on soil. Laboratory Project ID: HWI 6311-106. Unpublished study performed by Hazleton Wisconsin, Inc., Madison, WI; and submitted by Valent U.S.A. Corporation, Walnut Creek, CA.

STUDY ID 44295039
Fathulla, R. N. 1993. Artificial sunlight photodegradation of [THP-^{14}C]-flumioxazin on soil. Laboratory Study ID: HWI 6311-158. Unpublished study performed by Hazleton Wisconsin, Inc., Madison, WI; and submitted by Valent U.S.A. Corporation, Walnut Creek, CA.

DIRECT REVIEW TIME = 113 Hours

REVIEWED BY:	A. M. Glucksman, M.S.	Signature:
TITLE:	Scientist	Date:
EDITED BY:	B. S. Perkovich, M.E.M.	Signature:
TITLE:	Scientist	Date:
APPROVED BY:	P. H. Howard, Ph.D.	Signature:
TITLE:	Project Manager	Date:
ORG:	Syracuse Research Corporation Arlington, VA 22202	
TEL:	703/413-9369	

APPROVED BY:	Larry Liu	
TITLE:	Environmental Scientist	
ORG:	ERB IV/EFED/OPP	
TEL:	703/305-5372	

SIGNATURE: [signature] 12/22/05

2039835

CONCLUSIONS

Degradation - Photodegradation on Soil

1. This study (both labels) is scientifically valid and provides useful information on the photodegradation on flumioxazin on sandy loam soil.

2. Uniformly phenyl ring-labeled [^{14}C]flumioxazin, at a nominal application rate of 2.5 μg/g (dry soil), degraded with a half-life of 3.2 days ($r^2 = 0.96$) in sandy loam soil maintained at 25 ± 1°C and irradiated with a xenon arc lamp on a 12-hour light/dark cycle for up to 6 days. In contrast, the half-life of the parent in the dark control soil was 11.8 days ($r^2 = 0.96$). However, because the half-life of the parent in the dark control soil was calculated beyond the scope of the observed data, the dark control half-life may be of questionable validity. All data, designated as percentages of the applied radioactivity, represent percentages of the nominal application. Data are reported as the mean of two replicates from TLC analyses of the soil extracts. In the irradiated soil samples, the parent compound was initially 96.9% of the applied radioactivity, decreased to 55.3% by 2 days and 34.5% by 4 days posttreatment, and was 29.1-29.8% at 5-6 days. In the irradiated soil, the minor degradate IMOXA was initially (time 0) 0.8% of the applied radioactivity, and increased to 3.1% by 6 days posttreatment (the last sampling interval). The combined minor degradates APF and 482-HA were initially (time 0) 1.4% of the applied radioactivity the irradiated samples, and were 0.6% at 6 days posttreatment. Origin material and two sources of uncharacterized residual radioactivity (designated Streak and Diffuse) were each ≤8.7% of the applied radioactivity throughout the incubation period. Nonextractable [^{14}C]residues the irradiated samples were initially (time 0) 3.0% of the applied radioactivity, increased to 16.4% by 1 day posttreatment, and were 43.3% at 6 days. Additional analysis of the nonextractable residues yielded seven unidentified compounds totaling ≤10.2% of the applied radioactivity (reviewer-calculated); remaining residues were not characterized. Evolved $^{14}CO_2$ and [^{14}C]organic volatiles were negligible for the irradiated samples.

   In the dark controls, the parent compound was initially 96.9% of the applied radioactivity, was 83.3% at 2 days posttreatment, and decreased to 68.4% by 6 days. The minor degradate IMOXA was initially (time 0) 0.8% of the applied radioactivity the dark controls, and was a maximum of 3.8% at 6 days posttreatment. The combined minor degradates APF and 482-HA were detected three times, at 1.4% of the applied radioactivity at time 0 and at 0.3-0.5% at 4-5 days posttreatment. Origin material and two sources of uncharacterized residual radioactivity (designated Streak and Diffuse) were ≤6.3% of the applied radioactivity throughout the incubation period. Nonextractable [^{14}C]residues the dark controls were initially (time 0) 3.0% of the applied radioactivity, increased to 9.6% by 2 days posttreatment, and were 17.1% at 6 days. Evolved $^{14}CO_2$ was negligible.

Tetrahydrophthalimido ring-labeled [1,2-^{14}C]flumioxazin, at a nominal application rate of 2.5 μg/g (dry soil), degraded with a half-life of 8.4 days ($r^2 = 0.95$) in sandy loam soil maintained at 25 ± 1°C and irradiated with a xenon arc lamp on a 12-hour light/dark cycle for up to 14 days. In contrast, the half-life of the parent in the dark control soil was 15.7 days ($r^2 = 0.82$). However, because the half-life of the parent in the dark control soil was calculated beyond the scope of the observed data, the dark control half-life may be of questionable validity. All data, designated as percentages of the applied radioactivity, represent percentages of the nominal application. Data are reported as the mean of two replicates from TLC analyses of the soil extracts. In the irradiated soil samples, the parent compound was initially 99.2% of the applied radioactivity, decreased to 82.2% by 7 days posttreatment, and was 36.9-37.0% at 9-14 days. In the irradiated soil, the major degradate Δ'-TPA was initially (day 1) 0.3% of the applied radioactivity, was a maximum of 21.6% at 9 days posttreatment, and was 8.6% at 14 days. The major degradate THPA was initially (day 2) 2.7% of the applied radioactivity, increased to 7.4% by 9 days posttreatment, and was a maximum of 12.9% at 14 days. The minor degradate 1-OH-HPA was detected twice, at 3.0% of the applied radioactivity at 9 days posttreatment and 4.4% at 14 days. Uncharacterized residual radioactivity (designated Streak) in the irradiated samples was initially (day 4) detected at 1.2% of the applied radioactivity, was not detected at 7 days posttreatment, was a maximum of 17.3% at 9 days, and was 15.1% at 14 days. Uncharacterized residual radioactivity (designated Diffuse) was ≤5.7% of the applied radioactivity at 2-14 days posttreatment. Nonextractable [^{14}C]residues in the irradiated samples were initially (time 0) 1.7% of the applied radioactivity, increased to a maximum of 9.3% by 14 days posttreatment. Evolved $^{14}CO_2$ and [^{14}C]organic volatiles were not detected during the incubation period.

In the dark control soil samples, the parent compound was initially 99.2% of the applied radioactivity, decreased to 81.5% by 9 days posttreatment, and was 51.7% at 14 days. The major degradate THPA was initially (day 2) 2.4% of the applied radioactivity, was a maximum of 10.2% at 9 days posttreatment, and was 7.7% at 14 days. The minor degradate Δ'-TPA was initially (day 1) 0.3% of the applied radioactivity the dark controls, was 0.4-3.8% at 2-9 days posttreatment, and was a maximum of 9.0% at 14 days (the last sampling interval). The minor degradate 1-OH-HPA was detected twice, at 1.5% of the applied radioactivity at 9 days posttreatment and 8.3% at 14 days. Two sources of uncharacterized residual radioactivity (designated Streak and Diffuse) were each ≤8.9% of the applied radioactivity throughout the incubation period. Nonextractable [^{14}C]residues the dark controls were 0.7-2.3% of the applied at 0-9 days posttreatment, and were a maximum of 5.0% at 14 days. $^{14}CO_2$ and [^{14}C]organic volatiles were not detected during the incubation period.

METHODOLOGY

The photolysis of flumioxazin (S-53482; 7-Fluoro-6-(3,4,5,6-tetrahydrophthalimido)-4-(2-

propynyl)-1,4-benzoxazin-3(2H)-one) on soil was examined using two radiolabeled compounds, uniformly phenyl ring-labeled [^{14}C]flumioxazin (radiochemical purity 99.4%; specific activity 148 mCi/mmol; p. 15, MRID 44295038) and tetrahydrophthalimido-labeled [1,2-^{14}C]flumioxazin (radiochemical purity >99%; specific activity 105 mCi/mmol; p. 14, MRID 44295039). Procedural methods reported by the reviewer refer to MRID 44295038 unless otherwise noted.

Samples (2 g) of sieved (2 mm) Cajon sandy loam soil (collected from Tulare County, CA; 62.6% sand, 29.0% silt, 8.4% clay, 0.87% organic matter, pH 7.6, 5.54 meq/100 g CEC; p. 21, MRID 44295038; OR 61.2% sand, 30.0% silt, 8.8% clay, 1.44% organic matter, pH 7.9, 6.41 meq/100 g CEC; p. 20, MRID 44295039) were moistened with water (2:1, w:v), distributed evenly onto Petri dishes equipped with side arms, and air dried (pp. 21-23). Soil samples were treated with uniformly phenyl ring-labeled [^{14}C]flumioxazin OR tetrahydrophthalimido-labeled [1,2-^{14}C]flumioxazin, dissolved in acetonitrile, at a nominal application rate of 2.5 μg/g. Following treatment, the acetonitrile was allowed to evaporate and the soil moisture was adjusted to 75% of 0.33 bar moisture content (p. 24); soil moisture was maintained by the addition of water as necessary throughout the incubation period. The samples were placed in a photolysis chamber equipped with a recirculating refrigerated water bath, sealed with a Pyrex glass plate, and incubated at 25 ± 1.1°C (Figure 2, p. 51); the temperature was monitored using a probe thermometer attached to a reference soil (p. 25). Dark control samples were prepared and incubated in a similar manner, except samples were placed in a dark chamber (Figure 3, p. 52). To capture volatiles, air was drawn through the test vessels and into an ethylene glycol trap, a charcoal trap, and two 2-ethoxyethanol:ethanolamine (1:1, v:v) traps connected in series (Figure 3, p. 52). Samples were irradiated on a 12 hour light/dark cycle using a xenon lamp equipped with a filter (see Comment #4). Light intensity from 290-750 nm was measured at the initiation of the study using a spectroradiometer (Appendix C, Table C-I, p. 120). The reviewer-calculated (290-750 nm) light intensity of the artificial light source was 368.48 watts x 10^{-5}/cm^2 (based on data from column two of Table C-1). The total light intensity for the duration of the study was not reported. A comparison graph of the artificial light with natural sunlight (June 1990 in Madison, WI) was presented in Appendix C (Figure C-1, p. 121). Duplicate irradiated and dark control samples were removed for analysis at 0, 1, 2, 3, 4, 5, and 6 days posttreatment (phenyl label) OR 0, 1, 2, 4, 7, 9, 14, and 20 days (tetrahydrophthalimido label); the samples analyzed at 20 days were used solely for the identification of the parent compound and potential degradates.

Uniformly phenyl ring-labeled [^{14}C]flumioxazin (MRID 44295038)

At each sampling interval, soil samples were extracted three times by stirring with acetone:water (5:1, v:v) and centrifuged (p. 25); the supernatants were decanted and analyzed for total radioactivity by LSC. The soil samples were further extracted three times by stirring with acetone:0.1 *N* HCl (9:1, v:v) and centrifuged; the supernatants were decanted and analyzed by LSC. The two extracts were analyzed separately by two-

dimensional TLC on silica gel plates developed with toluene:ethyl formate:formic acid (5:7:1, v:v:v) and dichloromethane:acetic acid (10:1, v:v; p. 26). Samples were co-chromatographed with a nonradiolabeled reference standard of the parent which was visualized by UV light (wavelength not specified). Areas of radioactivity on the plates were quantified by radioimage scanning. To confirm the identity of the parent compound, an aliquot of unspecified samples of the acetone:water extract was analyzed by TLC on silica gel plates developed with toluene:ethyl formate:formic acid (5:7:1, v:v:v). Samples were co-chromatographed with a nonradiolabeled reference standard of the parent which was visualized with UV light (wavelength not specified). The area with the parent compound was scraped from the plates and extracted (solvent not specified); the extract was analyzed by two-dimensional TLC as described previously. A selected sample (irradiated day 6) was also analyzed by two-dimensional TLC as described previously. Following two-dimensional TLC analysis, the band corresponding to the parent compound was scraped from the plate, extracted with methanol and centrifuged; the supernatant was decanted, evaporated to dryness, and reconstituted with acetonitrile. An aliquot of the sample was analyzed by HPLC (Waters Resolve octadecyl column) using a mobile phase gradient of acetonitrile:PIC A (20:80 to 45:55 to 70:30 to 90:10, v:v; see Comment #8) with UV (250 nm) and radioactive flow detection (p. 27). The sample was co-chromatographed with a nonradiolabeled reference standard of the parent (p. 34). To confirm the identity of the degradates, selected samples (irradiated and dark control day 6; one replicate each) of the acetone:water extracts were further analyzed by two-dimensional TLC as described previously (p. 27). Samples were co-chromatographed with a nonradiolabeled reference standard of the parent and with each of the following nonradiolabeled reference standards: IMOXA, PNF, AFP, and 482-HA. Areas of radioactivity were quantified by radioimage scanning, scraped, extracted with methanol, and analyzed by HPLC using a mobile phase gradient of acetonitrile:PIC A (20:80 to 45:55 to 90:10 to 20:80, v:v; p. 28) with UV (250 nm) and radioactive flow detection. Samples were co-chromatographed with nonradiolabeled reference standards of IMOXA, APF, or 482-HA.

Selected post-extracted soil samples (irradiated soils, days 0-6; dark controls, days 4-6; first replicate only) were refluxed with methanol:0.1 *N* HCl (5:1, v:v) and centrifuged; the supernatants were decanted and analyzed by LSC (p. 28). Extracts containing >10% of the applied radioactivity were analyzed by two-dimensional TLC as described previously. Soil samples containing >10% of the applied radioactivity following the initial extraction were extracted a second time with methanol:1.0 *N* NH_4OH (8:2, v:v) and centrifuged; the supernatants were decanted and analyzed by LSC. Other selected samples (irradiated soils, days 2-6; second replicate only) were extracted with 0.1 *N* oxalic acid in dimethyl formamide and centrifuged; the supernatants were decanted and analyzed by LSC. Extracts containing >10% of the applied radioactivity were analyzed by two-dimensional TLC as described previously. Selected samples (those containing >10% of the applied radioactivity following the oxalic acid extraction) were extracted further with methanol:1.0 *N* NH_4OH (8:2, v:v) and centrifuged; the supernatants were decanted and

analyzed by LSC.

Post-extracted soil samples were analyzed in duplicate for total radioactivity by LSC following combustion; data were not corrected for combustion efficiency (combustion efficiency >95%; p. 29).

Tetrahydrophthalimido ring-labeled [1,2-^{14}C]flumioxazin (MRID 44295039)

At each sampling interval, soil samples were extracted three times by stirring with acetone:water (5:1, v:v) and centrifuged (p. 25); the supernatants were decanted and analyzed for total radioactivity by LSC. The soil samples were further extracted three times by stirring with acetone:water (5:1, v:v; adjusted to pH 1 with HCl) and centrifuged; the supernatants were decanted and analyzed by LSC. The first acetone:water extract was filtered (0.45 μm), concentrated by evaporation under nitrogen (with the exception of 0- to 7-days sample extracts), and analyzed by two-dimensional TLC on silica gel plates developed with chloroform:methanol:formic acid (10:1:1, v:v:v) and hexane:ethyl acetate:acetic acid (8:6:1, v:v:v; p. 26). Samples were co-chromatographed with a nonradiolabeled reference standard of the parent and with each of the following nonradiolabeled reference standards: Δ'-TPA, THPA, THPA-2Na, or 1-OH-HPA; nonradiolabeled standards were visualized by UV light (wavelength not specified). Areas of radioactivity on the plates were quantified by radioimage scanning. Selected samples (1-7 days) of the second acetone:water extract were evaporated to dryness by rotary evaporation, reconstituted in acetonitrile, filtered (0.45 μm), and evaporated and reconstituted a second time; the extracts were analyzed by two-dimensional TLC as described previously. The remaining samples (days 9 and 14) of the second acetone:water extract were filtered, concentrated under nitrogen, and analyzed by two-dimensional TLC as described previously.

To isolate the parent and the degradates Δ'-TPA and THPA, selected extracts containing the respective radioactive areas were combined, evaporated to dryness, and reconstituted with acetonitrile (p. 26); the extracts were analyzed by TLC on silica gel plates developed with hexane:ethyl acetate:acetic acid (8:6:1, v:v:v). Radiolabeled zones corresponding to the parent, Δ'-TPA, and THPA were scraped from the plates, extracted by sonicating with acetonitrile, and centrifuged; the supernatant was decanted, concentrated under nitrogen, reconstituted with acetonitrile, and analyzed by two-dimensional TLC as described previously. To confirm the identity of the parent and degradate Δ'-TPA, selected extracts were analyzed by HPLC (5 μm C_{18} Waters column) using a mobile phase gradient of water:acetonitrile (80:20 to 55:45 to 10:90, v:v) with UV (254 nm) and radioactive flow detection (p. 27). Samples were co-chromatographed with nonradiolabeled reference standards. To confirm the identity of the degradates THPA and 1-OH-HPA, eluate fractions were analyzed by HPLC (Lichrosorb RP-18 5 μm column) using a mobile phase gradient of acetonitrile:0.01% aqueous trifluoroacetic acid (10:90 to 45:55 to 80:20 to 100:20, v:v). Samples were co-chromatographed with the nonradiolabeled reference

standards. Duplicate post-extracted soil samples were analyzed for total radioactivity by LSC following combustion (p. 26); data were not corrected for combustion efficiency (combustion efficiency >95%; p. 28).

Duplicate aliquots of the volatile trap solutions were analyzed for total radioactivity by LSC at each sampling interval (p. 26). The charcoal traps were analyzed by LSC following combustion.

For both label studies, soil viability was determined prior to the preparation of the soil:solution slurry (p. 21, MRID 44295038; p. 20 MRID 44295039). Soil samples had 1.2×10^7 and 9.4×10^4 (phenyl label) and 1.2×10^7 and 11×10^4 (tetrahydrophthalimido label) aerobic and anaerobic CFU/g soil, respectively; soil viability was not measured at the termination of the incubation.

DATA SUMMARY

Uniformly phenyl ring-labeled [^{14}C]flumioxazin (MRID 44295038)

Uniformly phenyl ring-labeled [^{14}C]flumioxazin (radiochemical purity 99.4%), at a nominal application rate of 2.5 μg/g (dry soil), degraded with a registrant-calculated half-life of 3.2 days ($r^2 = 0.96$) in sandy loam soil maintained at 25 ± 1°C and irradiated with a xenon arc lamp on a 12-hour light/dark cycle for up to 6 days (Table VIII, p. 45; Figure 17, p. 66). In contrast, the registrant-calculated half-life of the parent in the dark control soil was 11.8 days ($r^2 = 0.96$; Table IX, p. 46; Figure 18, p. 67). However, because the half-life of the parent in the dark control soil was calculated beyond the scope of the observed data, the dark control half-life may be of questionable validity (see Comment #1). A reviewer-calculated photolytic half-life (to account for degradation in the dark control) was not determined. All data, designated as percentages of the applied radioactivity, represent percentages of the nominal application. Data are reported as the mean of two replicates from TLC analyses of the soil extracts. In the irradiated soil samples, the parent compound was initially present at 96.9% of the applied radioactivity, decreased to 55.3% by 2 days and 34.5% of the applied by 4 days posttreatment, and was 29.1-29.8% of the applied at 5-6 days posttreatment (Table VII, p. 44). In the irradiated soil, the minor degradate 7-fluoro-6-nitro-(3,4,5,6-tetrahydrophthalimido)-2H-1,4-benzoxazin-3(4H)-one (IMOXA) was initially (time 0) present at 0.8% of the applied radioactivity, and increased to 3.1% of the applied by 6 days posttreatment (the last sampling interval). The combined minor degradates 6-amino-7-fluoro-4-(2-propynyl)-2H-1,4-benzoxazin-3(4H)-one (APF) and N-[7-Fluoro-3-oxo-4-(2-propynyl)-2H-1,4-benzoaxin-6-yl]3,4,5,6-tetrahydrophthalamic acid (482-HA) were initially (time 0) present at 1.4% of the applied radioactivity and were 0.6% of the applied at 6 days posttreatment. Three unidentified minor degradates (designated Peaks 1, 3, and 5) were each present at ≤1.6% of the applied radioactivity throughout the incubation period. Origin material and two sources of

uncharacterized residual radioactivity (designated Streak and Diffuse) were each ≤8.7% of the applied radioactivity throughout the incubation period. Nonextractable [^{14}C]residues were initially (time 0) present at 3.0% of the applied radioactivity, increased to 16.4% of the applied by 1 day posttreatment, and were 43.3% of the applied at 6 days posttreatment (Table IV, p. 41). Additional analysis of the nonextractable residues yielded seven unidentified compounds totaling ≤10.2% of the applied radioactivity (reviewer-calculated from data in totals column minus origin plus diffuse radioactivity in Table XII, p. 49); remaining residues were not characterized (see Comment #3). Evolved $^{14}CO_2$ accounted for ≤0.6% of the applied radioactivity from 1 to 6 days posttreatment; [^{14}C]organic volatiles were negligible.

In the dark controls, the parent compound was initially present at 96.9% of the applied radioactivity, was 83.3% of the applied at 2 days posttreatment, and decreased to 68.4% of the applied by 6 days posttreatment. The minor degradate IMOXA was initially (time 0) present at 0.8% of the applied radioactivity and was a maximum of 3.8% of the applied at 6 days posttreatment. The combined minor degradates APF and 482-HA were detected three times, at 1.4% of the applied radioactivity at time 0 and at 0.3-0.5% of the applied at 4-5 days posttreatment. Three minor unidentified degradates (designated Peak 1, 3, and 5) were each ≤3.5% of the applied radioactivity throughout the incubation period. Origin material and two sources of uncharacterized residual radioactivity (designated Streak and Diffuse) were ≤6.3% of the applied radioactivity throughout the incubation period. Nonextractable [^{14}C]residues were initially (time 0) present at 3.0% of the applied radioactivity, increased to 9.6% of the applied by 2 days posttreatment, and were 17.1% of the applied at 6 days posttreatment (Table IV, p. 41). Evolved $^{14}CO_2$ accounted for ≤0.2% of the applied radioactivity from 1 to 6 days posttreatment; [^{14}C]organic volatiles were negligible.

Material balances in the irradiated soil (based on LSC analysis) were 105.1-105.4% of the applied radioactivity at 0-1 days, and decreased to 89.9-92.3% by 4-6 days (Table IV, p. 41). In the dark control soil, material balances were 103.2-108.2% of the applied radioactivity throughout the incubation period.

Tetrahydrophthalimido ring-labeled [1,2-^{14}C]flumioxazin (MRID 44295039)

Tetrahydrophthalimido ring-labeled [1,2-^{14}C]flumioxazin (radiochemical purity >99%), at a nominal application rate of 2.5 μg/g (dry soil), degraded with a registrant-calculated half-life of 8.4 days (r^2 = 0.95) in sandy loam soil maintained at 25 ± 1°C and irradiated with a xenon arc lamp on a 12-hour light/dark cycle for up to 14 days (Table VII, p. 44; Figure 19, p. 66). In contrast, the registrant-calculated half-life of the parent in the dark control soil was 15.7 days (r^2 = 0.82; Table VIII, p. 45; Figure 20, p. 67). However, because the half-life of the parent in the dark control soil was calculated beyond the scope of the observed data, the dark control half-life may be of questionable validity (see Comment #1). A reviewer-calculated photolytic half-life (to account for degradation in

the dark control) was not determined. All data, designated as percentages of the applied radioactivity, represent percentages of the nominal application. Data are reported as the mean of two replicates from TLC analyses of the soil extracts. In the irradiated soil samples, the parent compound was initially present at 99.2% of the applied radioactivity, decreased to 82.2% of the applied by 7 days posttreatment, and was 36.9-37.0% of the applied at 9-14 days posttreatment (Table VI, p. 43). In the irradiated soil, the major degradate

3,4,5,6-tetrahydrophthalic anhydride (Δ'-TPA)

was initially (day 1) present at 0.3% of the applied radioactivity, was a maximum of 21.6% of the applied at 9 days posttreatment, and was 8.6% of the applied at 14 days posttreatment. The major degradate

3,4,5,6-tetrahydrophthalic acid (THPA)

was initially (day 2) present at 2.7% of the applied radioactivity, increased to 7.4% of the applied by 9 days posttreatment, and was a maximum of 12.9% of the applied at 14 days posttreatment. The minor degradate 1-hydroxy-trans-1,2-cyclohexanedicarboxylic acid (1-OH-HPA) was detected twice, at 3.0% of the applied radioactivity at 9 days posttreatment and 4.4% of the applied at 14 days posttreatment. An unidentified minor degradate (designated Area 3) was 0.4-1.6% of the applied at 4-14 days posttreatment. Uncharacterized residual radioactivity (designated Streak) was initially (day 4) detected at 1.2% of the applied radioactivity, was not detected at 7 days posttreatment, was a maximum of 17.3% of the applied at 9 days posttreatment, and was 15.1% of the applied at 14 days posttreatment. Uncharacterized residual radioactivity (designated Diffuse) was ≤5.7% of the applied radioactivity at 2-14 days posttreatment. Nonextractable [^{14}C]residues were initially (time 0) 1.7% of the applied radioactivity and increased to a maximum of 9.3% of the applied by 14 days posttreatment (Table III, p. 40). $^{14}CO_2$ and [^{14}C]organic volatiles were not detected during the incubation period.

In the dark control soil samples, the parent compound was initially present at 99.2% of the applied radioactivity, decreased to 81.5% of the applied by 9 days posttreatment, and was 51.7% of the applied at 14 days posttreatment. The major degradate

THPA

was initially (day 2) present at 2.4% of the applied radioactivity, was a maximum of 10.2% of the applied at 9 days posttreatment, and was 7.7% of the applied at 14 days posttreatment (Table VI, p. 43). The minor degradate Δ'-TPA was initially (day 1) present at 0.3% of the applied radioactivity, was 0.4-3.8% of the applied at 2-9 days posttreatment, and was a maximum of 9.0% of the applied at 14 days posttreatment. The minor degradate 1-OH-HPA was detected twice, at 1.5% of the applied radioactivity at 9

days posttreatment and 8.3% of the applied at 14 days posttreatment. An unidentified minor degradate (designated Area 3) was detected twice, at 0.2% of the applied radioactivity at 7 days posttreatment and 1.5% of the applied at 14 days posttreatment. Two sources of uncharacterized residual radioactivity (designated Streak and Diffuse) were each ≤8.9% of the applied radioactivity throughout the incubation period. Nonextractable [^{14}C]residues were 0.7-2.3% of the applied at 0-9 days posttreatment, and were a maximum of 5.0% of the applied at 14 days posttreatment (Table III, p. 40). $^{14}CO_2$ and [^{14}C]organic volatiles were not detected during the incubation period.

Material balances in the irradiated soil (based on LSC analysis) were 92.4-100.9% of the applied radioactivity throughout the incubation period (Table III, p. 40). In the dark control soil, material balances were 92.1-100.9% of the applied radioactivity throughout the incubation period.

COMMENTS

1. The study was not conducted long enough to observe the pattern of decline of the parent in the dark control and the patterns of formation and decline of degradates in both the irradiated and dark control soils. The registrant-calculated half-lives for uniformly phenyl ring-labeled [^{14}C]flumioxazin (11.8 days) and tetrahydrophthalimido ring-labeled [1,2-^{14}C]flumioxazin (15.7 days) in the dark control soil samples are of questionable validity because they were estimated assuming the continuation of the apparent degradation pattern beyond the scope of the observed data (Table IX, p. 46, MRID 44295038; Table VIII, p. 45, MRID 44295039). Data which appear linear may become curvilinear with time, and half-life estimations based on extrapolated data may be inaccurate. Because the dark-control half-life is used in the calculation of a photolytic half-life, and the dark control half-lives are of questionable validity, the reviewer did not calculate a photolytic half-life for either study.

2. The registrant-calculated half-lives were variable between the two radiolabels. In the irradiated samples, the registrant-calculated half-lives were 3.2 days for the phenyl label study and 8.4 days for the tetrahydrophthalimido label study; respective half-lives in the dark controls were 11.8 days and 15.7 days. The reviewer notes that there was a slight difference in the organic matter content (0.87% *vs.* 1.44%, respectively) of the Cajon sandy loam soils used in the two studies (p. 21, MRID 44295038; p. 20, MRID 44295039), which may be a factor in the difference in the observed results between labels. The reviewer also notes, however, that in the tetrahydrophthalimido label study, a sharp decrease (>50%) in the parent compound occurred between two sampling intervals (day 7 and day 9; ; Table VI, p. 43; MRID 44295039); by day 7, the parent was still present at 82.2% of the applied radioactivity. In contrast, the parent in the phenyl label study was only 29.1% of the applied radioactivity by 6 days. The reviewer notes that the differences may have been due to differing levels of microbial activity between the samples in the two

studies (as well as between samples within a study, based on the observed degradation pattern); soil viability was not confirmed at the end of the study (for either label).

3. The analytical methods, specifically soil extraction and residue characterization, may have been inadequate for the phenyl label study. Nonextractable [^{14}C] residues were present at unacceptable levels and uncharacterized [^{14}C]residues accounted for >10% of the applied radioactivity. In the phenyl label study, nonextractable [^{14}C]residues accounted for 26.7% of the applied radioactivity at 2 days posttreatment and increased to 43.3% of the applied by 6 days posttreatment (Table IV, p. 41; MRID 44295038). Uncharacterized radioactivity (designated Streak) was present at a maximum of 11.3% of the applied radioactivity (day 9, Table VI, p. 43; MRID 44295039). Subdivision N Guidelines require that a reasonable attempt be made to extract and identify all degradates present at ≥10% of the applied radioactivity. Only selected samples were further analyzed (also see Comment #6).

4. The total light intensity of the artificial light was not reported. Subdivision N Guidelines require the determination of the average light intensity of the artificial light source at the beginning and end of the study, and total light intensity over the course of the study. In addition, intensity of the artificial light source at the termination of the incubation period for the phenyl label study was not reported. Artificial light sources should be tested at both the beginning and at the end of the study since they are known to age with use, which may result in irregular emissions.

5. Soil viability was not confirmed at the termination of the study. Soil viability data is necessary to allow the reviewer to determine the influence of microbial degradation on the observed data.

6. The post-extracted soils of selected samples in the phenyl label study were further analyzed. Further extraction with methanol:0.1 *N* HCl removed 7.2-12.9% of the applied radioactivity; extraction with methanol:0.1 *N* NH_4OH removed 5.0-8.3% of the applied radioactivity; extraction with 0.1 *N* oxalic acid in DMF removed 15.7-26.8% of the applied radioactivity; and a second extraction with methanol:0.1 *N* NH_4OH removed 4.7-9.0% of the applied radioactivity (Table XI, p. 48; MRID 44295038). Extracts analyzed by TLC contained seven unidentified compounds (designated peaks 1-7; each ≤9.1% of the applied radioactivity), origin material (≤9.8% of the applied radioactivity), and uncharacterized residual radioactivity (designated Diffuse; ≤7.8% of the applied radioactivity; Table XII, p. 49; MRID 44295038). However, organic matter fractionation to determine radioactivity associated with the humic acid, fulvic acid, and humin fractions was not performed.

7. The limits of detection and quantification were not reported for LSC, TLC, or HPLC analyses. Both limits of detection and quantification should be reported to allow the reviewer to evaluate the adequacy of the method for the determination of the test

compound and its degradates.

8. In the phenyl label study, the study author stated that the HPLC mobile phase gradient consisted of Pic A:water:acetonitrile (1.5:95:5, v:v:v; p. 27; MRID 44295038). The reviewer is unfamiliar with this abbreviation and was unable to define Pic A.

9. In the phenyl label study, the study author stated that recovery of radioactivity from the TLC plates was 96.1% and 95.9% of the applied radioactivity for the irradiated and dark control samples, respectively (p. 29; MRID 44295038). In the tetrahydrophthalimido label study, 98.3-100.0% and 96.2% of the applied radioactivity was recovered from the TLC plates in the irradiated and dark control samples, respectively (p. 28; MRID 44295039).

10. The proposed pathway for photolytic degradation of the parent compound and degradates is presented in Figure 1 of each study (p. 50, phenyl label, MRID 44295038; p. 48, tetrahydrophthalimido label, MRID 44295039).

11. The absorption spectrum for the parent compound is reported in Appendix C (Figure C-3; p. 122, MRID 44295038); the absorption maximum was at approximately 220 nm.

12. The study was conducted using uniformly phenyl ring-labeled [^{14}C]flumioxazin and tetrahydrophthalimido ring-labeled [1,2-^{14}C]flumioxazin. The compound contains additional ring structures that were not radiolabeled.

13. The reviewer noted that a sandy loam soil was also used in the submitted aerobic soil metabolism study (MRID 44295040); however, the soil was not of the Cajon series.

14. The reviewer notes that the studies were conducted at an exaggerated application rate. The study author stated that the nominal application rate of 2.5 μg/g was approximately 26 times greater than the maximum proposed application rate of 43.4 g a.i./A (0.096 ppm) for the parent compound (p. 23, MRID 44295038).

Table IV

Mean Distribution of Radioactivity Among the Matrices of the Artificial Sunlight-Irradiated and Dark Control Samples[a]

Sample Interval (Day)	Percentage of Radioactivity Applied to Sample						
	Acetone:Water (5:1) Extracts	Acetone: 0.1N HCl (9:1) Extracts	Extracted Soil	Traps for Volatile Components: Ethylene Glycol	2-E:E	Charcoal	Material Balance[b]
			Artificial Sunlight-Irradiated Samples				
0	98.7	3.4	3.0	NA	NA	NA	105.1
1	82.0	7.0	16.4	ND	<0.1	<0.1	105.4
2	64.4	8.1	26.7	ND	0.1	<0.1	99.2
4	46.1	9.1	35.9	ND	0.4	<0.1	91.5
5	39.3	8.6	41.4	0.1	0.5	<0.1	89.9
6	38.9	9.5	43.3	0.1	0.5	<0.1	92.3
			Dark Control Samples				
0	98.7	3.4	3.0	NA	NA	NA	105.1
1	90.4	8.2	9.6	ND	<0.1	<0.1	108.2
2	87.6	7.4	8.3	ND	0.1	<0.1	103.3
4	80.8	11.3	14.6	ND	0.2	<0.1	106.7
5	74.7	14.4	15.8	ND	0.2	<0.1	104.9
6	73.6	12.5	17.1	ND	0.2	<0.1	103.2

NA Not applicable.
ND None detected.

a Mean of duplicate values in Table F-I.
b Sum of mean values within the row. Due to rounding, the sum of the values in the row may not equal the material balance values.

Table V

Mean TLC Distribution of Radioactivity for the Acetone:Water (5:1) Extract Expressed as the Percentage of Radioactivity Applied to the Artificial Sunlight-Irradiated and Dark Control Samples[a]

Sample Interval (Day)	Acetone:H_2O Extracts	Percentage of Radioactivity Applied to Sample								
		Origin	S-53482	Peak 1	IMOXA	Peak 3	APF/482-HA	Peak 5	Streak	Diffuse
					Artificial Sunlight-Irradiated Samples					
0	98.7	0.4	94.3	0.4	0.7	ND	1.4	ND	ND	1.6
1	82.0	1.1	71.9	0.5	1.5	1.0	0.5	ND	3.8	2.0
2	64.4	2.2	50.5	1.2	1.7	ND	ND	ND	5.5	3.5
4	46.1	3.3	30.7	ND	2.0	0.5	ND	ND	6.9	2.8
5	39.3	2.1	26.2	0.5	1.9	ND	ND	0.5	4.8	3.5
6	38.9	2.0	25.4	0.6	2.5	0.7	0.6	ND	3.9	3.4
					Dark Control Samples					
0	98.7	0.4	94.3	0.4	0.7	ND	1.4	ND	ND	1.6
1	90.4	0.2	84.7	2.4	1.1	ND	ND	ND	0.0	2.1
2	87.6	0.3	77.5	3.2	1.4	1.3	ND	ND	1.1	2.9
4	80.8	1.0	67.6	0.7	1.2	1.5	0.4	ND	3.8	4.7
5	74.7	0.8	62.1	0.6	2.7	0.7	0.3	ND	5.0	2.7
6	73.6	1.4	60.2	0.9	3.1	0.5	ND	ND	4.2	3.4

ND None detected.

a Mean of duplicate values in Table F-IV.

Table VI

Mean TLC Distribution of Radioactivity for the Acetone:0.1N HCl (9:1) Extract Expressed as the Percentage of Radioactivity Applied to the Artificial Sunlight-Irradiated and Dark Control Samples[a]

Sample Interval (Day)	Acetone: 0.1N HCl Extract	Percentage of Radioactivity Applied to Sample								
		Origin	S-53482 Parent	IMOXA Peak 1	IMOXA Peak 2	IMOXA Peak 3	APF/482-HA Peak 4	APF/482-HA Peak 5	Streak	Diffuse
				Artificial Sunlight-Irradiated Samples						
0	3.4	0.3	2.6	0.1	0.1	0.1	ND	ND	0.1	0.2
1	7.0	1.3	4.5	0.3	ND	ND	ND	ND	0.7	0.7
2	8.1	1.4	4.8	0.4	ND	ND	ND	ND	0.8	0.8
4	9.1	2.1	3.8	ND	0.2	ND	0.4	ND	1.8	0.8
5	8.6	1.6	3.6	ND	0.3	ND	0.5	ND	1.9	0.9
6	9.5	1.8	3.7	ND	0.6	ND	ND	ND	2.4	1.1
				Dark Control Samples						
0	3.4	0.3	2.6	0.1	0.1	0.1	ND	ND	0.1	0.2
1	8.2	0.6	7.5	ND	ND	ND	ND	ND	ND	0.3
2	7.4	0.8	5.8	0.3	ND	0.1	ND	ND	0.2	0.3
4	11.3	1.3	7.5	ND	0.2	0.1	0.1	ND	1.2	1.0
5	14.4	0.9	9.8	0.3	0.5	0.2	ND	ND	1.3	1.6
6	12.5	0.8	8.2	0.5	0.7	0.2	ND	0.3	0.9	1.2

ND None detected.

a Mean of duplicate values in Table F-VII.

Table VII

Mean TLC Distribution of Radioactivity for the Combined Soil Extracts [Acetone:Water (5:1) and Acetone:0.1N HCl (9:1)] Expressed as the Percentage of Radioactivity Applied to the Artificial Sunlight-Irradiated and Dark Control Samples[a]

Sample Interval (Day)	Percentage of Radioactivity Applied to Sample									
		S-53482	IMOXA		APF/482-HA					
	Origin	Parent	Peak 1	Peak 2	Peak 3	Peak 4	Peak 5	Streak	Diffuse	Total[b]
					Artificial Sunlight-Irradiated Samples					
0	0.7	96.9	0.5	0.8	0.1	1.4	ND	0.1	1.8	102.3
1	2.4	76.4	0.8	1.5	1.0	0.5	ND	4.5	2.7	89.8
2	3.6	55.3	1.6	1.7	ND	ND	ND	6.3	4.3	72.8
4	5.4	34.5	ND	2.2	0.5	0.4	ND	8.7	3.6	55.3
5	3.7	29.8	0.5	2.2	ND	0.5	0.5	6.7	4.4	48.3
6	3.8	29.1	0.6	3.1	0.7	0.6	ND	6.3	4.5	48.7
					Dark Control Samples					
0	0.7	96.9	0.5	0.8	0.1	1.4	ND	0.1	1.8	102.3
1	0.8	92.2	2.4	1.1	ND	ND	ND	0.0	2.4	98.1
2	1.1	83.3	3.5	1.4	1.4	ND	ND	1.3	3.2	95.2
4	2.3	75.1	0.7	1.4	1.6	0.5	ND	5.0	5.7	96.8
5	1.7	71.9	0.9	3.2	0.9	0.3	ND	6.3	4.3	89.5
6	2.2	68.4	1.2	3.8	0.7	ND	0.3	5.1	4.6	86.3

ND None detected.

a Sum of values in Tables V and VI.

b Sum of values within in the row. Due to rounding, the sum of the values in the row may not equal the total values.

Table VIII

Determination of Photodegradation Half-Life of [Phe-^{14}C]-S-53482
Using First-Order Kinetics (Artificial Sunlight-Irradiated Samples)

Sample Interval (Day)	Sample Number	Percent of Applied Radioactivity[a] (Analyzed as S-53482)	Natural Log Percent of Applied Radioactivity[b] (Analyzed as S-53482)
0	A	96.2	4.566
0	B	97.5	4.580
1	AS03	73.3	4.295
1	AS09	79.3	4.373
2	AS10	59.6	4.082
2	AS01	51.0	3.932
4	AS02	37.3	3.619
4	AS04	31.7	3.456
5	AS06	29.0	3.367
5	AS07	30.5	3.418
6	AS05	30.9	3.431
6	AS08	27.2	3.303

a Values were calculated using values in Appendix F (Tables F-I, F-II, and F-V).
Sample A (Day 0): 98.7 (0.947) + 3.6 (0.763) = 96.2

b Results of linear regression analysis of the natural log percentage of applied radioactivity recovered as [Phe-^{14}C]-S-53482 over time:

Correlation coefficient	=	-0.975
Regression coefficient (slope)	=	-0.213
Constant (y-intercept)	=	4.51
Photodegradation half-life	=	3.2 days

Table IX

Determination of Degradation Half-Life of [Phe-^{14}C]-S-53482
Using First-Order Kinetics (Dark Control Samples)

Sample Interval (Day)	Sample Number	Percent of Applied Radioactivity[a] (Analyzed as S-53482)	Natural Log Percent of Applied Radioactivity[b] (Analyzed as S-53482)
0	A	96.2	4.566
0	B	97.5	4.580
1	DC03	93.3	4.536
1	DC06	90.0	4.510
2	DC04	82.6	4.414
2	DC02	83.9	4.430
4	DC07	74.6	4.312
4	DC10	75.3	4.324
5	DC01	69.2	4.237
5	DC09	74.5	4.311
6	DC05	66.5	4.197
6	DC08	70.2	4.251

a Values were calculated using values from Appendix F (Tables F-I, F-II, and F-V).
Sample A (Day 0): 98.7 (0.947) + 3.6 (0.763) = 96.2

b Results of linear regression analysis of the natural log percentage of applied radioactivity recovered as [Phe-^{14}C]-S-53482 over time:

Correlation coefficient = -0.981
Regression coefficient (slope) = -0.0589
Constant (y-intercept) = 4.57

Degradation half-life = 11.8 days

Table X

Mean Summary of Radioactivity Found Among the Sample Matrices
Expressed Relative to the Field Application Rate of S-53482[a]

Sample Interval (Day)	Individual Radioactivity Expressed Relative to the Field Application Rate of S-53482 (μg/g)													
	Acetone:Water (5:1) and Acetone:0.1N HCl (9:1) Extracts									Extracted Soil	Traps for Volatile Components			
	S-53482	Origin	Peak 1	IMOXA	Peak 3	APF/482-HA	Peak 5	Streak	Diffuse		2-E:E	Ethylene Glycol	Charcoal	Total
Artificial Sunlight-Irradiated Samples														
0	0.093	0.001	<0.001	0.001	<0.001	0.001	ND	<0.001	0.002	0.003	NA	NA	NA	0.101
1	0.073	0.002	0.001	0.001	0.001	<0.001	ND	0.004	0.003	0.016	ND	ND	ND	0.101
2	0.053	0.003	0.002	0.002	ND	ND	ND	0.006	0.004	0.026	<0.001	ND	ND	0.095
4	0.033	0.005	ND	0.002	<0.001	<0.001	ND	0.008	0.003	0.035	<0.001	ND	ND	0.088
5	0.029	0.004	<0.001	0.002	ND	<0.001	<0.001	0.006	0.004	0.040	<0.001	<0.001	ND	0.086
6	0.028	0.004	0.001	0.003	0.001	0.001	ND	0.006	0.004	0.042	<0.001	<0.001	ND	0.089
Dark Control Samples														
0	0.093	0.001	<0.001	0.001	<0.001	0.001	ND	<0.001	0.002	0.003	NA	NA	ND	0.101
1	0.089	0.001	0.002	0.001	ND	ND	ND	<0.001	0.002	0.009	ND	ND	ND	0.104
2	0.080	0.001	0.003	0.001	0.001	ND	ND	0.001	0.003	0.008	<0.001	ND	ND	0.099
4	0.072	0.002	0.001	0.001	0.002	<0.001	ND	0.005	0.005	0.014	<0.001	ND	ND	0.103
5	0.069	0.002	0.001	0.003	0.001	<0.001	ND	0.006	0.004	0.015	<0.001	ND	ND	0.101
6	0.066	0.002	0.001	0.004	0.001	ND	<0.001	0.005	0.004	0.016	<0.001	ND	ND	0.099

ND None detected.
2-E:E 2-Ethoxyethanol:ethanolamine (1:1)

a All values calculate by multiplying the percentage of applied radioactivity (percent component divided by 100) of corresponding values in Tables IV and VII by the nominal study application rate (2.5 μg S-53482/g soil) and dividing the result by 26 (study application rate was approximately 26 times the field application rate).

Table XI

Percentage of Radioactivity Released from the Extracted Soil by Reflux Extraction for Selected Samples

Sample Interval (Day)	Sample Number	Percentage of Radioactivity Applied to Sample: Extracted Soil (Before Reflux[e])	Reflux 1[af]	Reflux 2[bf]	Reflux 3[cf]	Reflux 4[df]	Extracted Soil (After Final Reflux)
0	A	3.0	7.2	-	-	-	0.0
1	AS03	16.3	7.5	-	-	-	8.8
2	AS01	26.5	8.3	5.0	-	-	13.2
4	AS04	38.1	10.2	7.6	-	-	20.3
5	AS06	43.7	10.7	8.3	-	-	24.7
6	AS08	44.3	11.2	7.4	-	-	25.7
4	DC07	14.1	10.2	*	-	-	3.9
5	DC01	15.3	11.5	*	-	-	3.8
6	DC05	18.4	12.9	*	-	-	5.5
2	AS-10	26.8	-	-	15.7	4.7	6.4
4	AS-02	33.6	-	-	20.1	4.8	8.7
5	AS-07	39.1	-	-	22.8	9.0	7.3
6	AS-05	42.3	-	-	26.8	6.0	9.5

* Reflux not attempted because less than 10% of the applied radioactivity remained in the sample.

a 5:1 MeOH/0.1N HCl
b 8:2 MeOH/1N NH_4OH; performed on samples from reflux #1 that still contained over 10% of applied radioactivity
c DMF/0.1N oxalic acid; performed on the duplicates of those samples that contained over 10% of applied radioactivity that were refluxed in #2
d 8:2 MeOH/1N NH_4OH; performed on samples refluxed in #3
e Values from Appendix D.
f Values from Appendix E

Table XII

Distribution of Percent Applied Radioactivity in Each Sample Refluxed in Methanol:0.1N HCl, and Distribution of Applied Radioactivity in Each Sample Refluxed in 0.1N Oxalic Acid in Dimethylformamide

Methanol:0.1N HCl (5:1) Reflux

Sample Interval (Day)	Sample Number	Percentage of Applied Radioactivity									
		Total in Reflux Solution	Origin	Peak 1	Peak 2	Peak 3	Peak 4	Peak 5	Peak 6	Peak 7	Diffuse
					Irradiated Samples						
4	AS04	10.2	3.2	4.1	0.1	<0.1	0.2	0.1	0.2	2.3	0.2
5	AS06	10.7	3.5	3.9	0.1	0.1	0.2	0.1	0.2	2.4	0.2
6	AS08	11.2	3.7	4.2	0.1	<0.1	0.3	0.1	0.2	2.4	0.2
					Dark Control Samples						
4	DC07	10.2	1.6	6.8	0.1	<0.1	0.3	0.1	0.2	1.1	0.1
5	DC01	11.5	1.3	7.7	0.2	0.1	0.5	0.2	0.2	1.3	0.1
6	DC05	12.9	1.8	9.1	0.1	0.1	0.3	0.1	0.2	1.2	0.1

0.1N Oxalic Acid in DMF Reflux

Sample Interval (Day)	Sample Number	Percentage of Applied Radioactivity									
		Total in Reflux Solution	Origin	Peak 1	Peak 2	Peak 3	Peak 4	Peak 5	Peak 6	Peak 7	Diffuse
					Irradiated Samples						
2	AS10	15.7	8.1	3.1	2.2	1.9	NA	NA	NA	NA	0.6
4	AS02	20.1	9.4	3.5	3.0	3.4	NA	NA	NA	NA	0.8
5	AS07	22.8	8.7	2.0	1.4	5.0	NA	NA	NA	0.9	4.8
6	AS05	26.8	9.8	0.7	0.6	5.4	NA	0.3	0.7	1.5	7.8

NA Not applicable.

Table IV

Mean Distribution of Radioactivity Among the Matrices of the Artificial Sunlight-Irradiated and Dark Control Samples[a]

Sample Interval (Day)	Percentage of Radioactivity Applied to Sample						
	Acetone:Water (5:1) Extracts	Acetone: 0.1N HCl (9:1) Extracts	Extracted Soil	Traps for Volatile Components: Ethylene Glycol	2-E:E	Charcoal	Material Balance[b]
			Artificial Sunlight-Irradiated Samples				
0	98.7	3.4	3.0	NA	NA	NA	105.1
1	82.0	7.0	16.4	ND	<0.1	<0.1	105.4
2	64.4	8.1	26.7	ND	0.1	<0.1	99.2
4	46.1	9.1	35.9	ND	0.4	<0.1	91.5
5	39.3	8.6	41.4	0.1	0.5	<0.1	89.9
6	38.9	9.5	43.3	0.1	0.5	<0.1	92.3
			Dark Control Samples				
0	98.7	3.4	3.0	NA	NA	NA	105.1
1	90.4	8.2	9.6	ND	<0.1	<0.1	108.2
2	87.6	7.4	8.3	ND	0.1	<0.1	103.3
4	80.8	11.3	14.6	ND	0.2	<0.1	106.7
5	74.7	14.4	15.8	ND	0.2	<0.1	104.9
6	73.6	12.5	17.1	ND	0.2	<0.1	103.2

NA Not applicable.
ND None detected.

a Mean of duplicate values in Table F-I.
b Sum of mean values within the row. Due to rounding, the sum of the values in the row may not equal the material balance values.

Table V

Mean TLC Distribution of Radioactivity for the Acetone:Water (5:1) Extract Expressed as the Percentage of Radioactivity Applied to the Artificial Sunlight-Irradiated and Dark Control Samples[a]

Sample Interval (Day)	Acetone:H_2O Extracts	Percentage of Radioactivity Applied to Sample								
		Origin	S-53482	Peak 1	IMOXA	Peak 3	APF/482-HA	Peak 5	Streak	Diffuse
Artificial Sunlight-Irradiated Samples										
0	98.7	0.4	94.3	0.4	0.7	ND	1.4	ND	ND	1.6
1	82.0	1.1	71.9	0.5	1.5	1.0	0.5	ND	3.8	2.0
2	64.4	2.2	50.5	1.2	1.7	ND	ND	ND	5.5	3.5
4	46.1	3.3	30.7	ND	2.0	0.5	ND	ND	6.9	2.8
5	39.3	2.1	26.2	0.5	1.9	ND	ND	0.5	4.8	3.5
6	38.9	2.0	25.4	0.6	2.5	0.7	0.6	ND	3.9	3.4
Dark Control Samples										
0	98.7	0.4	94.3	0.4	0.7	ND	1.4	ND	ND	1.6
1	90.4	0.2	84.7	2.4	1.1	ND	ND	ND	0.0	2.1
2	87.6	0.3	77.5	3.2	1.4	1.3	ND	ND	1.1	2.9
4	80.8	1.0	67.6	0.7	1.2	1.5	0.4	ND	3.8	4.7
5	74.7	0.8	62.1	0.6	2.7	0.7	0.3	ND	5.0	2.7
6	73.6	1.4	60.2	0.9	3.1	0.5	ND	ND	4.2	3.4

ND None detected.

a Mean of duplicate values in Table F-IV.

Table VI

Mean TLC Distribution of Radioactivity for the Acetone:0.1N HCl (9:1) Extract Expressed as the Percentage of Radioactivity Applied to the Artificial Sunlight-Irradiated and Dark Control Samples[a]

Sample Interval (Day)	Acetone: 0.1N HCl Extract	Percentage of Radioactivity Applied to Sample								
		Origin	S-53482 Parent	IMOXA Peak 1	IMOXA Peak 2	IMOXA Peak 3	APF/482-HA Peak 4	APF/482-HA Peak 5	Streak	Diffuse
				Artificial Sunlight-Irradiated Samples						
0	3.4	0.3	2.6	0.1	0.1	0.1	ND	ND	0.1	0.2
1	7.0	1.3	4.5	0.3	ND	ND	ND	ND	0.7	0.7
2	8.1	1.4	4.8	0.4	ND	ND	ND	ND	0.8	0.8
4	9.1	2.1	3.8	ND	0.2	ND	0.4	ND	1.8	0.8
5	8.6	1.6	3.6	ND	0.3	ND	0.5	ND	1.9	0.9
6	9.5	1.8	3.7	ND	0.6	ND	ND	ND	2.4	1.1
				Dark Control Samples						
0	3.4	0.3	2.6	0.1	0.1	0.1	ND	ND	0.1	0.2
1	8.2	0.6	7.5	ND	ND	ND	ND	ND	ND	0.3
2	7.4	0.8	5.8	0.3	ND	0.1	ND	ND	0.2	0.3
4	11.3	1.3	7.5	ND	0.2	0.1	0.1	ND	1.2	1.0
5	14.4	0.9	9.8	0.3	0.5	0.2	ND	ND	1.3	1.6
6	12.5	0.8	8.2	0.5	0.7	0.2	ND	0.3	0.9	1.2

ND None detected.

a Mean of duplicate values in Table F-VII.

Table VII

Mean TLC Distribution of Radioactivity for the Combined Soil Extracts [Acetone:Water (5:1) and Acetone:0.1N HCl (9:1)] Expressed as the Percentage of Radioactivity Applied to the Artificial Sunlight-Irradiated and Dark Control Samples[a]

Sample Interval (Day)	Percentage of Radioactivity Applied to Sample									
	Origin	S-53482 Parent	IMOXA Peak 1	IMOXA Peak 2	APF/482-HA Peak 3	APF/482-HA Peak 4	Peak 5	Streak	Diffuse	Total[b]
Artificial Sunlight-Irradiated Samples										
0	0.7	96.9	0.5	0.8	0.1	1.4	ND	0.1	1.8	102.3
1	2.4	76.4	0.8	1.5	1.0	0.5	ND	4.5	2.7	89.8
2	3.6	55.3	1.6	1.7	ND	ND	ND	6.3	4.3	72.8
4	5.4	34.5	ND	2.2	0.5	0.4	ND	8.7	3.6	55.3
5	3.7	29.8	0.5	2.2	ND	0.5	0.5	6.7	4.4	48.3
6	3.8	29.1	0.6	3.1	0.7	0.6	ND	6.3	4.5	48.7
Dark Control Samples										
0	0.7	96.9	0.5	0.8	0.1	1.4	ND	0.1	1.8	102.3
1	0.8	92.2	2.4	1.1	ND	ND	ND	0.0	2.4	98.1
2	1.1	83.3	3.5	1.4	1.4	ND	ND	1.3	3.2	95.2
4	2.3	75.1	0.7	1.4	1.6	0.5	ND	5.0	5.7	96.8
5	1.7	71.9	0.9	3.2	0.9	0.3	ND	6.3	4.3	89.5
6	2.2	68.4	1.2	3.8	0.7	ND	0.3	5.1	4.6	86.3

ND None detected.

a Sum of values in Tables V and VI.
b Sum of values within in the row. Due to rounding, the sum of the values in the row may not equal the total values.

Table VIII

Determination of Photodegradation Half-Life of [Phe-^{14}C]-S-53482
Using First-Order Kinetics (Artificial Sunlight-Irradiated Samples)

Sample Interval (Day)	Sample Number	Percent of Applied Radioactivity[a] (Analyzed as S-53482)	Natural Log Percent of Applied Radioactivity[b] (Analyzed as S-53482)
0	A	96.2	4.566
0	B	97.5	4.580
1	AS03	73.3	4.295
1	AS09	79.3	4.373
2	AS10	59.6	4.082
2	AS01	51.0	3.932
4	AS02	37.3	3.619
4	AS04	31.7	3.456
5	AS06	29.0	3.367
5	AS07	30.5	3.418
6	AS05	30.9	3.431
6	AS08	27.2	3.303

a Values were calculated using values in Appendix F (Tables F-I, F-II, and F-V).
Sample A (Day 0): 98.7 (0.947) + 3.6 (0.763) = 96.2

b Results of linear regression analysis of the natural log percentage of applied radioactivity recovered as [Phe-^{14}C]-S-53482 over time:

Correlation coefficient	=	-0.975
Regression coefficient (slope)	=	-0.213
Constant (y-intercept)	=	4.51
Photodegradation half-life	=	3.2 days

Table IX

Determination of Degradation Half-Life of [Phe-^{14}C]-S-53482
Using First-Order Kinetics (Dark Control Samples)

Sample Interval (Day)	Sample Number	Percent of Applied Radioactivity[a] (Analyzed as S-53482)	Natural Log Percent of Applied Radioactivity[b] (Analyzed as S-53482)
0	A	96.2	4.566
0	B	97.5	4.580
1	DC03	93.3	4.536
1	DC06	90.0	4.510
2	DC04	82.6	4.414
2	DC02	83.9	4.430
4	DC07	74.6	4.312
4	DC10	75.3	4.324
5	DC01	69.2	4.237
5	DC09	74.5	4.311
6	DC05	66.5	4.197
6	DC08	70.2	4.251

a Values were calculated using values from Appendix F (Tables F-I, F-II, and F-V).
Sample A (Day 0): 98.7 (0.947) + 3.6 (0.763) = 96.2

b Results of linear regression analysis of the natural log percentage of applied radioactivity recovered as [Phe-^{14}C]-S-53482 over time:

Correlation coefficient	=	-0.981
Regression coefficient (slope)	=	-0.0589
Constant (y-intercept)	=	4.57
Degradation half-life	=	11.8 days

Table X

Mean Summary of Radioactivity Found Among the Sample Matrices
Expressed Relative to the Field Application Rate of S-53482[a]

Sample Interval (Day)	Individual Radioactivity Expressed Relative to the Field Application Rate of S-53482 (µg/g)													
	Acetone:Water (5:1) and Acetone:0.1N HCl (9:1) Extracts									Extracted Soil	Traps for Volatile Components			
	S-53482	Origin	Peak 1	IMOXA	Peak 3	APF/482-HA	Peak 5	Streak	Diffuse		2-E:E	Ethylene Glycol	Charcoal	Total
Artificial Sunlight-Irradiated Samples														
0	0.093	0.001	<0.001	0.001	<0.001	0.001	ND	<0.001	0.002	0.003	NA	NA	NA	0.101
1	0.073	0.002	0.001	0.001	0.001	<0.001	ND	0.004	0.003	0.016	ND	ND	ND	0.101
2	0.053	0.003	0.002	0.002	ND	ND	ND	0.006	0.004	0.026	<0.001	ND	ND	0.095
4	0.033	0.005	ND	0.002	<0.001	<0.001	ND	0.008	0.003	0.035	<0.001	ND	ND	0.088
5	0.029	0.004	<0.001	0.002	ND	<0.001	<0.001	0.006	0.004	0.040	<0.001	<0.001	ND	0.086
6	0.028	0.004	0.001	0.003	0.001	0.001	ND	0.006	0.004	0.042	<0.001	<0.001	ND	0.089
Dark Control Samples														
0	0.093	0.001	<0.001	0.001	<0.001	0.001	ND	<0.001	0.002	0.003	NA	NA	ND	0.101
1	0.089	0.001	0.002	0.001	ND	ND	ND	<0.001	0.002	0.009	ND	ND	ND	0.104
2	0.080	0.001	0.003	0.001	0.001	ND	ND	0.001	0.003	0.008	<0.001	ND	ND	0.099
4	0.072	0.002	0.001	0.001	0.002	<0.001	ND	0.005	0.005	0.014	<0.001	ND	ND	0.103
5	0.069	0.002	0.001	0.003	0.001	<0.001	ND	0.006	0.004	0.015	<0.001	ND	ND	0.101
6	0.066	0.002	0.001	0.004	0.001	ND	<0.001	0.005	0.004	0.016	<0.001	ND	ND	0.099

ND None detected.
2-E:E 2-Ethoxyethanol:ethanolamine (1:1)

a All values calculate by multiplying the percentage of applied radioactivity (percent component divided by 100) of corresponding values in Tables IV and VII by the nominal study application rate (2.5 µg S-53482/g soil) and dividing the result by 26 (study application rate was approximately 26 times the field application rate).

Table XI

Percentage of Radioactivity Released from the Extracted Soil by Reflux Extraction for Selected Samples

Sample Interval (Day)	Sample Number	Percentage of Radioactivity Applied to Sample: Extracted Soil (Before Reflux[e])	Reflux 1[af]	Reflux 2[bf]	Reflux 3[cf]	Reflux 4[df]	Extracted Soil (After Final Reflux)
0	A	3.0	7.2	-	-	-	0.0
1	AS03	16.3	7.5	-	-	-	8.8
2	AS01	26.5	8.3	5.0	-	-	13.2
4	AS04	38.1	10.2	7.6	-	-	20.3
5	AS06	43.7	10.7	8.3	-	-	24.7
6	AS08	44.3	11.2	7.4	-	-	25.7
4	DC07	14.1	10.2	*	-	-	3.9
5	DC01	15.3	11.5	*	-	-	3.8
6	DC05	18.4	12.9	*	-	-	5.5
2	AS-10	26.8	-	-	15.7	4.7	6.4
4	AS-02	33.6	-	-	20.1	4.8	8.7
5	AS-07	39.1	-	-	22.8	9.0	7.3
6	AS-05	42.3	-	-	26.8	6.0	9.5

* Reflux not attempted because less than 10% of the applied radioactivity remained in the sample.

a 5:1 MeOH/0.1N HCl
b 8:2 MeOH/1N NH_4OH; performed on samples from reflux #1 that still contained over 10% of applied radioactivity
c DMF/0.1N oxalic acid; performed on the duplicates of those samples that contained over 10% of applied radioactivity that were refluxed in #2
d 8:2 MeOH/1N NH_4OH; performed on samples refluxed in #3
e Values from Appendix D.
f Values from Appendix E

Table XII

Distribution of Percent Applied Radioactivity in Each Sample Refluxed in Methanol:0.1N HCl, and Distribution of Applied Radioactivity in Each Sample Refluxed in 0.1N Oxalic Acid in Dimethylformamide

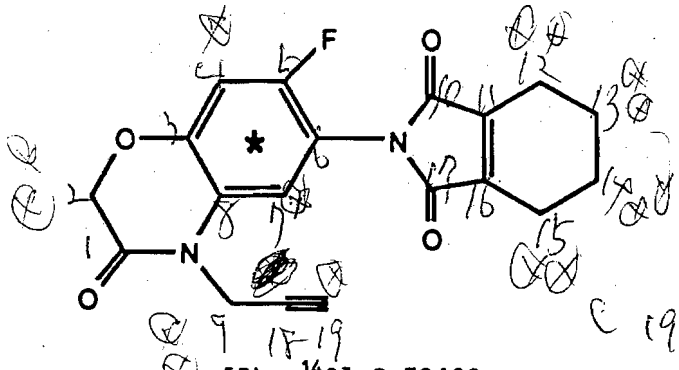
Methanol:0.1N HCl (5:1) Reflux

Sample Interval (Day)	Sample Number	Percentage of Applied Radioactivity									
		Total in Reflux Solution	Origin	Peak 1	Peak 2	Peak 3	Peak 4	Peak 5	Peak 6	Peak 7	Diffuse
					Irradiated Samples						
4	AS04	10.2	3.2	4.1	0.1	<0.1	0.2	0.1	0.2	2.3	0.2
5	AS06	10.7	3.5	3.9	0.1	0.1	0.2	0.1	0.2	2.4	0.2
6	AS08	11.2	3.7	4.2	0.1	<0.1	0.3	0.1	0.2	2.4	0.2
					Dark Control Samples						
4	DC07	10.2	1.6	6.8	0.1	<0.1	0.3	0.1	0.2	1.1	0.1
5	DC01	11.5	1.3	7.7	0.2	0.1	0.5	0.2	0.2	1.3	0.1
6	DC05	12.9	1.8	9.1	0.1	0.1	0.3	0.1	0.2	1.2	0.1

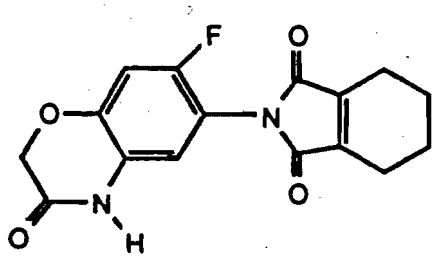
0.1N Oxalic Acid in DMF Reflux

Sample Interval (Day)	Sample Number	Percentage of Applied Radioactivity									
		Total in Reflux Solution	Origin	Peak 1	Peak 2	Peak 3	Peak 4	Peak 5	Peak 6	Peak 7	Diffuse
					Irradiated Samples						
2	AS10	15.7	8.1	3.1	2.2	1.9	NA	NA	NA	NA	0.6
4	AS02	20.1	9.4	3.5	3.0	3.4	NA	NA	NA	NA	0.8
5	AS07	22.8	8.7	2.0	1.4	5.0	NA	NA	NA	0.9	4.8
6	AS05	26.8	9.8	0.7	0.6	5.4	NA	0.3	0.7	1.5	7.8

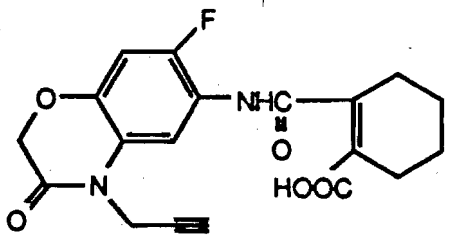
NA Not applicable.



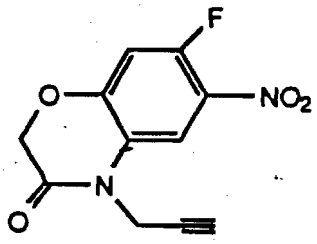
[Phe-^{14}C]-S-53482



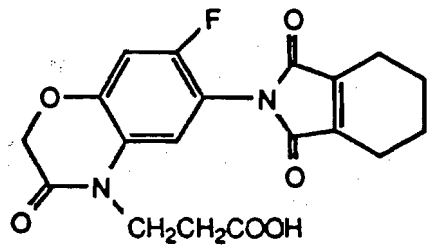
IMOXA



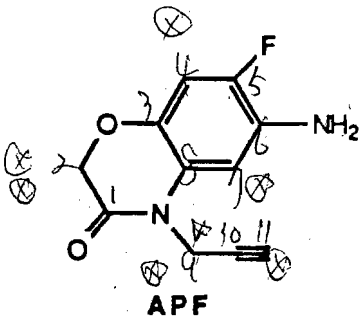
482-HA



PNF



482-CA



APF

Figure 1. Chemical structures of [Phe-^{14}C]-S-53482 and related compounds. The position of the radiolabel for [Phe-^{14}C]-S-53482 is indicated by an asterisk (*).

Table D-I

Individual Sample Data and the Percentage of Applied Radioactivity Found in the Acetone:Water (5:1) Extracts of the Soil from the Artificial Sunlight-Irradiated and Dark Control Samples

Sample Interval (Day)	Sample Number	Extract Weight (g)			Radioactivity				
					LSC Value (dpm)				
		Total	Aliquot 1	Aliquot 2	Aliquot 1	Aliquot 2	Mean Concentration (dpm/g)	Total (dpm)	Percent of Applied[a]
Artificial Sunlight-Irradiated Samples									
0	A	11.2937	0.0758	0.0756	31,199	30,600	408,179	4,609,852	98.7
0	B	11.3850	0.0713	0.0777	29,677	30,237	402,689	4,584,613	98.6
1	AS03	11.8900	0.0793	0.0807	24,672	25,114	311,162	3,699,718	79.6
1	AS09	11.4832	0.0795	0.0792	27,234	26,997	341,719	3,924,023	84.4
2	AS10	11.5930	0.0791	0.0810	20,111	20,771	255,340	2,960,156	63.7
2	AS01	11.6456	0.0787	0.0819	20,549	21,172	259,808	3,025,619	65.1
4	AS02	11.5944	0.0811	0.0827	16,504	16,915	204,018	2,365,468	50.9
4	AS04	11.5013	0.0792	0.0800	13,215	13,324	166,703	1,917,302	41.2
5	AS06	11.6680	0.0772	0.0761	11,395	11,196	147,363	1,719,431	37.0
5	AS07	11.4106	0.0796	0.0807	13,538	13,652	169,623	1,935,495	41.6
6	AS05	11.7833	0.0757	0.0765	11,661	11,781	154,021	1,814,877	39.0
6	AS08	11.4436	0.0799	0.0801	12,558	12,666	157,649	1,804,077	38.8
Dark Control Samples									
0	A	11.2937	0.0758	0.0756	31,199	30,600	408,179	4,609,852	98.7
0	B	11.3850	0.0713	0.0777	29,677	30,237	402,689	4,584,613	98.6
1	DC03	11.7776	0.0808	0.0824	29,135	28,963	356,037	4,193,264	90.2
1	DC06	11.7004	0.0792	0.0796	28,437	28,670	359,614	4,207,633	90.5
2	DC04	11.2134	0.0804	0.0788	28,955	28,223	359,148	4,027,274	86.6
2	DC02	11.4899	0.0776	0.0787	27,782	28,270	358,614	4,120,437	88.6
4	DC07	11.5679	0.0795	0.0816	25,869	26,325	324,003	3,748,037	80.6
4	DC10	11.7103	0.0777	0.0775	25,031	24,904	321,746	3,767,738	81.0
5	DC01	11.3228	0.0801	0.0785	23,846	23,839	300,692	3,404,678	73.2
5	DC09	11.4399	0.0758	0.0784	23,391	24,299	309,262	3,537,930	76.1
6	DC05	11.2854	0.0789	0.0800	23,952	24,241	303,293	3,422,786	73.6
6	DC08	11.2907	0.0780	0.0808	23,709	24,428	303,144	3,422,709	73.6

a Total radioactivity applied (dpm) = 4,650,000 (with the exception of sample A, for both Artificial Sunlight-Irradiated and Dark Control Samples, which had a total of 4,670,000 dpm of radioactivity applied).

Table D-II

Individual Sample Data and the Percentage of Applied Radioactivity Found in the Acetone:1M HCl (9:1) Extracts of the Soil from the Artificial Sunlight-Irradiated and Dark Control Samples

Sample Interval (Day)	Sample Number	Extract Weight (g)			Radioactivity				
					LSC Value (dpm)				
			Aliquot		Aliquot		Mean Concentration	Total	Percent of Applied[a]
		Total	1	2	1	2	(dpm/g)	(dpm)	
Artificial Sunlight-Irradiated Samples									
0	A	12.1446	0.0739	0.0708	986	992	13,677	166,100	3.6
0	B	12.0898	0.0724	0.0753	896	875	11,998	145,053	3.1
1	AS03	12.0911	0.0786	0.0782	2,082	2,083	26,563	321,172	6.9
1	AS09	12.1977	0.0784	0.0797	2,110	2,156	26,982	329,123	7.1
2	AS10	12.0298	0.0798	0.0800	2,640	2,597	32,773	394,248	8.5
2	AS01	11.9651	0.0793	0.0796	2,354	2,399	29,911	357,894	7.7
4	AS02	12.0139	0.0773	0.0774	2,738	2,681	35,029	420,839	9.1
4	AS04	12.2907	0.0787	0.0770	2,645	2,646	33,986	417,713	9.0
5	AS06	12.0866	0.0755	0.0766	2,381	2,338	31,029	375,039	8.1
5	AS07	12.0872	0.0733	0.0768	2,592	2,634	34,829	420,988	9.1
6	AS05	12.0844	0.0754	0.0771	2,893	2,907	38,036	459,648	9.9
6	AS08	12.1747	0.0766	0.0783	2,636	2,701	34,454	419,467	9.0
Dark Control Samples									
0	A	12.1446	0.0739	0.0708	986	992	13,677	166,100	3.6
0	B	12.0898	0.0724	0.0753	896	875	11,998	145,053	3.1
1	DC03	12.1779	0.0772	0.0783	2,431	2,504	31,735	386,461	8.3
1	DC06	11.9524	0.0778	0.0772	2,414	2,429	31,246	373,465	8.0
2	DC04	11.6440	0.0763	0.0787	2,166	2,236	28,400	330,687	7.1
2	DC02	12.4072	0.0791	0.0797	2,322	2,257	28,837	357,786	7.7
4	DC07	12.1143	0.0774	0.0789	3,456	3,562	44,898	543,913	11.7
4	DC10	12.1029	0.0794	0.0784	3,267	3,303	41,638	503,942	10.8
5	DC01	12.1737	0.0788	0.0781	4,328	4,337	55,228	672,324	14.5
5	DC09	12.2202	0.0752	0.0748	4,027	4,056	53,888	658,517	14.2
6	DC05	12.0456	0.0770	0.0772	3,462	3,492	45,097	543,222	11.7
6	DC08	12.1033	0.0777	0.0782	3,927	4,032	51,050	617,877	13.3

a Total radioactivity applied (dpm) = 4,650,000 (with the exception of sample A, for both Artificial Sunlight-Irradiated and Dark Control Samples, which had a total of 4,670,000 dpm of radioactivity applied).

Table D-III

Individual Sample Data and the Percentage of Applied Radioactivity Found in the Extracted Soil from the Artificial Sunlight-Irradiated and Dark Control Samples

Sample Interval (Day)	Sample Number	Extracted Soil Weight (g)			Radioactivity: LSC Value (dpm)		Radioactivity: Mean Concentration (dpm/g)	Radioactivity: Total (dpm)	Radioactivity: Percent of Applied[a]
		Total	Aliquot 1	Aliquot 2	Aliquot 1	Aliquot 2			
Artificial Sunlight-Irradiated Samples									
0	A	1.971	0.2222	0.2105	15,238	15,023	69,973	137,917	3.0
0	B	1.970	0.1988	0.2259	14,353	14,842	68,950	135,831	2.9
1	AS03	1.970	0.1862	0.2179	74,938	80,478	385,897	760,217	16.3
1	AS09	1.970	0.2435	0.2198	88,240	91,188	388,625	765,591	16.5
2	AS10	1.967	0.2098	0.2210	132,698	140,019	633,034	1,245,178	26.8
2	AS01	1.972	0.1937	0.1842	124,542	111,687	624,649	1,231,809	26.5
4	AS02	1.968	0.1649	0.1821	137,563	137,131	793,637	1,561,878	33.6
4	AS04	1.972	0.1921	0.1579	169,736	144,446	899,188	1,773,198	38.1
5	AS06	1.971	0.1031	0.2195	104,828	229,803	1,031,849	2,033,775	43.7
5	AS07	1.972	0.1786	0.1780	167,330	161,227	921,334	1,816,870	39.1
6	AS05	1.968	0.1625	0.1391	163,880	137,828	999,674	1,967,358	42.3
6	AS08	1.967	0.2273	0.1637	229,693	177,714	1,048,068	2,061,550	44.3
Dark Control Samples									
0	A	1.971	0.2222	0.2105	15,238	15,023	69,973	137,917	3.0
0	B	1.970	0.1988	0.2259	14,353	14,842	68,950	135,831	2.9
1	DC03	1.969	0.2085	0.1886	47,268	41,250	222,711	438,518	9.4
1	DC06	1.967	0.2032	0.2092	47,849	47,157	230,447	453,288	9.7
2	DC04	1.968	0.2027	0.2318	44,909	46,003	210,007	413,294	8.9
2	DC02	1.971	0.1916	0.1576	37,490	25,862	179,884	354,550	7.6
4	DC07	1.971	0.2554	0.1959	76,375	71,440	331,858	654,093	14.1
4	DC10	1.970	0.2100	0.2113	70,819	78,191	353,640	696,671	15.0
5	DC01	1.967	0.1947	0.2085	66,518	79,199	360,747	709,590	15.3
5	DC09	1.968	0.1973	0.2148	75,700	82,442	383,744	755,208	16.2
6	DC05	1.967	0.2152	0.2226	97,911	92,194	434,573	854,805	18.4
6	DC08	1.969	0.2298	0.2299	86,387	83,908	370,449	729,415	15.7

a Total radioactivity applied (dpm) = 4,650,000 (with the exception of sample A, for both Artificial Sunlight-Irradiated and Dark Control Samples, which had a total of 4,670,000 dpm of radioactivity applied).

Table D-IV

Individual Sample Data and the Percentage of Applied Radioactivity Found in the 2-Ethoxyethanol:Ethanolamine (1:1) Traps from the Artificial Sunlight-Irradiated and Dark Control Samples

Sample Interval (Day)	Number of Samples Incubated	Trapping Media Volume (mL)			Radioactivity: LSC Value (dpm)						
			Aliquot		Aliquot		Mean Concentration	Recovered			
		Total	1	2	1	2	(dpm/mL)	Total (dpm)	Per Sample (dpm)	(%)[a]	Cumulative (%)
Artificial Sunlight-Irradiated Samples											
Trap 1											
0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1	10	95	1.00	1.00	294	265	280	26,553	2,655	<0.1	<0.1
2	8	100	1.00	1.00	341	334	338	33,750	4,219	<0.1	0.1
4	6	98	1.00	1.00	533	544	539	52,773	8,796	0.2	0.3
5	4	103	1.00	1.00	187	188	188	19,313	4,828	0.1	0.4
6	2	100	1.00	1.00	43	48	46	4,550	2,275	<0.1	0.5
Trap 2											
0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1	10	92	1.00	1.00	14	17	ND	ND	ND	ND	ND
2	8	98	1.00	1.00	4	11	ND	ND	ND	ND	ND
4	6	98	1.00	1.00	42	36	39	3,822	637	<0.1	<0.1
5	4	107	1.00	1.00	4	0	ND	ND	ND	ND	<0.1
6	2	98	1.00	1.00	4	7	ND	ND	ND	ND	<0.1
Dark Control Samples											
Trap 1											
0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1	10	92	1.00	1.00	477	489	483	44436	4444	<0.1	<0.1
2	8	98	1.00	1.00	94	89	92	8967	1121	<0.1	0.1
4	6	102	1.00	1.00	186	186	186	18972	3162	<0.1	0.2
5	4	100	1.00	1.00	0	0	ND	ND	ND	ND	0.2
6	2	106	1.00	1.00	34	27	31	3233	901	<0.1	0.2
Trap 2											
0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1	10	98	1.00	1.00	17	13	ND	ND	ND	ND	ND
2	8	98	1.00	1.00	7	4	ND	ND	ND	ND	ND
4	6	106	1.00	1.00	25	21	ND	ND	ND	ND	ND
5	4	98	1.00	1.00	34	35	35	3381	845	<0.1	<0.1
6	2	106	1.00	1.00	2	6	ND	ND	ND	ND	<0.1

a Total radioactivity applied (dpm) = 4,650,000

Table D-V

Individual Sample Data and the Percentage of Applied Radioactivity Found in the Ethylene Glycol Trap from the Artificial Sunlight-Irradiated and Dark Control Samples

Sample Interval (Day)	Number of Samples Incubated	Trapping Media Volume (mL)			Radioactivity						
					LSC Value (dpm)						
			Aliquot		Aliquot		Mean Concentration	Recovered			
		Total	1	2	1	2	(dpm/g)	Total (dpm)	Per Sample (dpm)	(%)[a]	Cumulative (%)
Artificial Sunlight-Irradiated Samples											
0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1	10	95	1.00	1.00	20	13	ND	ND	ND	ND	ND
2	8	102	1.00	1.00	9	13	ND	ND	ND	ND	ND
4	6	100	1.00	1.00	20	27	ND	ND	ND	ND	ND
5	4	104	1.00	1.00	189	177	183	19032	4758	0.1	0.1
6	2	104	1.00	1.00	13	5	ND	ND	ND	ND	0.1
Dark Control Samples											
0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1	10	98	1.00	1.00	15	21	ND	ND	ND	ND	ND
2	8	100	1.00	1.00	12	16	ND	ND	ND	ND	ND
4	6	112	1.00	1.00	29	23	ND	ND	ND	ND	ND
5	4	103	1.00	1.00	0	0	ND	ND	ND	ND	ND
6	2	104	1.00	1.00	15	18	ND	ND	ND	ND	ND

a Total radioactivity applied (dpm) = 4,650,000

NA Not applicable.
ND None detected.

Table D-VI

Individual Sample Data and the Percentage of Applied Radioactivity Found in the Charcoal Trap from the Artificial Sunlight-Irradiated and Dark Control Samples

Sample Interval (Day)	Number of Samples Incubated	Number of Aliquots per Sample	Radioactivity: LSC Value (dpm) Aliquot 1	Aliquot 2	Aliquot 3	Radioactivity: Recovered Total (dpm)	Per Sample (dpm)	Per Sample (%)[a]	Cumulative (%)
Artificial Sunlight-Irradiated Samples									
0	NA	NA	NA	NA	NA	NA	NA	NA	NA
1	10	3	5	6	16	27	3	<0.1	<0.1
2	8	3	80	73	115	268	34	<0.1	<0.1
4	6	3	205	125	149	479	80	<0.1	<0.1
5	4	3	176	205	191	572	143	<0.1	<0.1
6	2	3	1	1	0	2	1	<0.1	<0.1
Dark Control Samples									
0	NA	NA	NA	NA	NA	NA	NA	NA	NA
1	10	3	76	94	51	221	22	<0.1	<0.1
2	8	3	71	40	49	160	20	<0.1	<0.1
4	6	3	17	38	16	71	12	<0.1	<0.1
5	4	3	17	50	349	416	104	<0.1	<0.1
6	2	3	59	50	16	125	63	<0.1	<0.1

a Total radioactivity applied (dpm) = 4,650,000

Table E-I

Percentage of Applied Radioactivity Recovered after Reflux 1

Sample Interval (Day)	Sample Number	Extracted Soil Weight (g)		Sample Weights (g)			LSC Value (dpm)		Mean (dpm/g)	Total Radioactivity Recovered (dpm)	% of Applied Radioactivity		
		Total	Sub-sample	Total	Aliquot 1	Aliquot 2	1	2			Reflux	Soil Before Reflux	Soil After Reflux
0	A	1.971	1.54	11.84	0.0715	0.0715	1791	1374	22133	262053	7.2	3.0	0.0
1	AS03	1.970	1.09	13.36	0.0790	0.0773	1132	1120	14409	192437	7.5	16.3	8.8
2	AS01	1.972	0.99	10.05	0.0757	0.0774	1435	1520	19297	193890	8.3	26.5	18.2
4	AS04	1.972	1.03	9.93	0.0755	0.0773	1875	1922	24849	246686	10.2	38.1	27.9
5	AS06	1.971	1.05	10.45	0.0772	0.0750	1961	1888	25287	264132	10.7	43.7	33.0
6	AS08	1.967	1.08	10.40	0.0778	0.0778	2157	2122	27500	286072	11.2	44.3	33.1
1	DC04	1.968	1.53	11.69	0.0741	0.0667	1376	1824	22958	268360	7.4	8.9	1.5
2	DC06	1.967	1.56	10.57	0.0594	0.0712	1824	1775	27818	293960	8.0	9.7	1.7
4	DC07	1.971	1.24	15.04	0.0803	0.0813	1376	1824	19786	297551	10.2	14.1	3.9
5	DC01	1.967	1.05	12.35	0.0774	0.0782	1824	1775	23132	285584	11.5	15.3	3.8
6	DC05	1.967	1.00	14.48	0.0804	0.0797	1696	1677	21068	305041	12.9	18.4	5.5

a Total radioactivity applied (dpm) = 4,650,000, with the exception of Sample A (4,670,000 dpm).

Table E-II

Percentage of Applied Radioactivity Recovered
after Reflux 2

Sample Interval (Day)	Sample Number	Extracted Soil Weight (g)		Sample Weights (g)			LSC Value (dpm)		Mean (dpm/g)	Total Radioactivity Recovered (dpm)	% of Applied Radioactivity		
		Total	Sub-sample	Total	Aliquot 1	Aliquot 2	1	2			Reflux	Soil Before Reflux	Soil After Reflux
2	AS01	1.972	0.99	10.42	0.0820	0.0820	904	919	11116	115826	5.0	18.2	13.2
4	AS04	1.972	1.03	10.60	0.0827	0.0823	1414	1464	17443	184977	7.6	27.9	20.3
5	AS06	1.971	1.05	10.29	0.0819	0.0830	1656	1656	20086	206598	8.3	33.0	24.7
6	AS08	1.967	1.08	10.80	0.0795	0.0805	1398	1407	17532	189273	7.4	33.1	25.7

a Total radioactivity applied (dpm) = 4,650,000

35

Table E-III

Percentage of Applied Radioactivity Recovered after Reflux 3

Sample Interval (Day)	Sample Number	Extracted Soil Weight (g)		Sample Weights (g)			LSC Value (dpm)		Mean (dpm/g)	Total Radioactivity Recovered (dpm)	% of Applied Radioactivity		
		Total	Sub-sample	Total	Aliquot 1	Aliquot 2	1	2			Reflux	Soil Before Reflux	Soil After Reflux
2	AS10	1.967	1.01	15.11	0.0926	0.0950	2320	2326	24769	374172	15.7	26.8	11.1
4	AS02	1.968	1.00	17.42	0.0936	0.0939	2566	2576	27424	477783	20.1	33.6	13.5
5	AS07	1.972	1.00	14.45	0.0942	0.0949	3512	3505	37108	536255	22.8	39.1	16.3
6	AS05	1.968	1.02	24.36	0.0943	0.0945	2554	2446	26484	645204	26.8	42.3	15.5

a Total radioactivity applied (dpm) = 4,650,000

Table E-IV

Percentage of Applied Radioactivity Recovered after Reflux 4

Sample Interval (Day)	Sample Number	Extracted Soil Weight (g)		Sample Weights (g)			LSC Value (dpm)		Mean (dpm/g)	Total Radioactivity Recovered (dpm)	% of Applied Radioactivity		
		Total	Sub-sample	Total	Aliquot 1	Aliquot 2	1	2			Reflux	Soil Before Reflux	Soil After Reflux
2	AS10	1.967	0.94	20.42	0.0810	0.0805	423	396	5071	103553	4.7	11.1	6.4
4	AS02	1.968	0.92	22.73	0.0854	0.0840	390	398	4652	105750	4.8	13.5	8.7
5	AS07	1.972	0.97	26.71	0.0805	0.0812	619	625	7693	205524	9.0	16.3	7.3
6	AS05	1.968	0.82	36.44	0.0768	0.0754	237	250	3201	116648	6.0	15.5	9.5

a Total radioactivity applied (dpm) = 4,650,000

Table F-I

Individual Distribution of Radioactivity among the Matrices of the Artificial Sunlight-Irradiated and Dark Control Samples

Sample Interval (Day)	Sample Number	Percentage of Radioactivity Applied to Sample[a]						
		Acetone:Water (5:1) Extracts	Acetone: 0.1N HCl (9:1) Extracts	Extracted Soil	Traps for Volatile Components: Ethylene Glycol	2-E:E	Charcoal	Material Balance
		Artificial Sunlight-Irradiated Samples						
0	A	98.7	3.6	3.0	NA	NA	NA	105.3
0	B	98.6	3.1	2.9				104.6
1	AS03	79.6	6.9	16.3	ND	<0.1	<0.1	102.8
1	AS09	84.4	7.1	16.5				108.0
2	AS10	63.7	8.5	26.8	ND	0.1	<0.1	99.0
2	AS01	65.1	7.7	26.5				99.3
4	AS02	50.9	9.1	33.6	ND	0.4	<0.1	94.0
4	AS04	41.2	9.0	38.1				88.7
5	AS06	37.0	8.1	43.7	0.1	0.5	<0.1	89.4
5	AS07	41.6	9.1	39.1				90.4
6	AS05	39.0	9.9	42.3	0.1	0.5	<0.1	91.8
6	AS08	38.8	9.0	44.3				92.7
		Dark Control Samples						
0	A	98.7	3.6	3.0	NA	NA	NA	105.3
0	B	98.6	3.1	2.9				104.6
1	DC03	90.2	8.3	9.4	ND	<0.1	<0.1	107.9
1	DC06	90.5	8.0	9.7				108.2
2	DC04	86.6	7.1	8.9	ND	0.1	<0.1	102.7
2	DC02	88.6	7.7	7.6				104.0
4	DC07	80.6	11.7	14.1	ND	0.2	<0.1	106.6
4	DC10	81.0	10.8	15.0				107.0
5	DC01	73.2	14.5	15.3	ND	0.2	<0.1	103.2
5	DC09	76.1	14.2	16.2				106.7
6	DC05	73.6	11.7	18.4	ND	0.2	<0.1	103.9
6	DC08	73.6	13.3	15.7				102.8

NA Not applicable.
ND None detected.

a Values from Appendix D.

Table F-II

Individual Relative Distribution of Radioactivity Expressed as the Percentage of Radioactivity Detected on the TLC Plate for the Acetone:Water (5:1) Extract of the Artificial Sunlight-Irradiated and Dark Control Samples

Sample Interval (Day)	Sample Number	Acetone: Water Extracts	Percentage of Radioactivity Applied to TLC Plate								
				S-53482		IMOXA	APF/482 HA				
			Origin	Parent	Peak 1	Peak 2	Peak 3	Peak 4	Peak 5	Streak	Diffuse
Artificial Sunlight-Irradiated Samples											
0	A	98.7	0.4	94.7	0.8	0.9	ND	1.4	ND	ND	1.8
0	B	98.6	0.4	96.4	ND	0.5	ND	1.4	ND	ND	1.3
1	AS03	79.6	1.6	86.4	ND	1.7	2.5	1.1	ND	5.2	1.6
1	AS09	84.4	1.0	88.8	1.1	1.9	ND	ND	ND	4.2	3.1
2	AS10	63.7	1.5	86.1	2.3	ND	ND	ND	ND	5.0	5.2
2	AS01	65.1	5.2	70.9	1.3	5.1	ND	ND	ND	11.8	5.7
4	AS02	50.9	6.2	65.9	ND	5.3	ND	ND	ND	17.2	5.4
4	AS04	41.2	8.3	67.8	ND	3.0	2.3	ND	ND	11.9	6.7
5	AS06	37.0	5.0	68.7	2.4	3.8	ND	ND	1.2	9.3	9.6
5	AS07	41.6	5.3	64.9	ND	5.7	ND	ND	1.2	14.8	8.2
6	AS05	39.0	5.0	69.5	1.3	3.4	0.7	1.4	ND	9.9	8.8
6	AS08	38.8	4.8	61.2	1.7	9.4	2.5	1.8	ND	10.0	8.5
Dark Control Samples											
0	A	98.7	0.4	94.7	0.8	0.9	ND	1.4	ND	ND	1.8
0	B	98.6	0.4	96.4	ND	0.5	ND	1.4	ND	ND	1.3
1	DC03	90.2	0.0	94.9	2.4	0.5	ND	ND	ND	0.0	2.2
1	DC06	90.5	0.3	92.5	2.9	1.8	ND	ND	ND	0.0	2.4
2	DC04	86.6	0.4	89.4	6.0	1.5	0.8	ND	ND	0.5	1.4
2	DC02	88.6	0.2	87.6	1.3	1.7	2.0	ND	ND	2.0	5.2
4	DC07	80.6	1.6	83.8	0.7	1.6	2.1	0.9	ND	5.4	3.9
4	DC10	81.0	0.9	83.6	0.9	1.4	1.6	ND	ND	3.8	7.7
5	DC01	73.2	1.0	81.2	1.0	3.3	1.2	ND	ND	8.0	4.4
5D	DC09	76.1	1.2	85.1	0.6	4.0	0.5	0.6	ND	5.3	2.9
6	DC05	73.6	2.1	80.5	1.3	3.8	0.8	ND	ND	5.7	5.7
6	DC08	73.6	1.7	83.0	1.0	4.6	0.5	ND	ND	5.7	3.6

ND None detected.

Table F-III

Mean Relative Distribution of Radioactivity Expressed as the Percentage of Radioactivity Detected on the TLC Plate for the Acetone:Water (5:1) Extract of the Artificial Sunlight-Irradiated and Dark Control Samples[a]

Sample Interval (Day)	Acetone:H_2O Extracts	Percent of Radioactivity Applied to TLC Plate								
		Origin	S-53482 Parent	IMOXA Peak 1	IMOXA Peak 2	IMOXA Peak 3	APF/482 HA Peak 4	APF/482 HA Peak 5	Streak	Diffuse
Artificial Sunlight-Irradiated Samples										
0	98.7	0.4	95.6	0.4	0.7	ND	1.4	ND	ND	1.6
1	82.0	1.3	87.6	0.6	1.8	1.3	0.6	ND	4.7	2.4
2	64.4	3.4	78.5	1.8	2.6	ND	ND	ND	8.4	5.5
4	46.1	7.3	66.9	ND	4.2	1.2	ND	ND	14.6	6.1
5	39.3	5.2	66.8	1.2	4.8	ND	ND	1.2	12.1	8.9
6	38.9	4.9	65.4	1.5	6.4	1.6	1.6	ND	10.0	8.7
Dark Control Samples										
0	98.7	0.4	95.6	0.4	0.7	ND	1.4	ND	ND	1.6
1	90.4	0.2	93.7	2.7	1.2	ND	ND	ND	0.0	2.3
2	97.6	0.3	88.5	3.7	1.6	1.4	ND	ND	1.3	3.3
4	80.8	1.3	83.7	0.8	1.5	1.9	0.5	ND	4.6	5.8
5	74.7	1.1	83.2	0.8	3.7	0.9	0.3	ND	6.7	3.7
6	73.6	1.9	81.8	1.2	4.2	0.7	ND	ND	5.7	4.7

ND None detected.

a Mean of duplicate values in Table F-II.

Table F-IV

Individual TLC Distribution of Radioactivity for the Acetone:Water (5:1) Extract Expressed as the Percentage of Radioactivity Applied to the Artificial Sunlight-Irradiated and Dark Control Samples

Sample Interval (Day)	Sample Number	Acetone: Water Extracts	Origin	S-53482 Parent	IMOXA Peak 1	IMOXA Peak 2	APF/482-HA Peak 3	APF/482-HA Peak 4	APF/482-HA Peak 5	Streak	Diffuse
					Artificial Sunlight-Irradiated Samples						
0	A	98.7	0.4	93.5	0.8	0.9	ND	1.4	ND	ND	1.8
0	B	98.6	0.4	95.1	ND	0.5	ND	1.4	ND	ND	1.3
1	AS03	79.6	1.3	68.8	ND	1.4	2.0	0.9	ND	4.1	1.3
1	AS09	84.4	0.8	74.9	0.9	1.6	ND	ND	ND	3.5	2.6
2	AS10	63.7	1.0	54.8	1.5	ND	ND	ND	ND	3.2	3.3
2	AS01	65.1	3.4	46.2	0.8	3.3	ND	ND	ND	7.7	3.7
4	AS02	50.9	3.2	33.5	ND	2.7	ND	ND	ND	8.8	2.7
4	AS04	41.2	3.4	27.9	ND	1.2	0.9	ND	ND	4.9	2.8
5	AS06	37.0	1.9	25.4	0.9	1.4	ND	ND	0.4	3.4	3.6
5	AS07	41.6	2.2	27.0	ND	2.4	ND	ND	0.5	6.2	3.4
6	AS05	39.0	2.0	27.1	0.5	1.3	0.3	0.5	ND	3.9	3.4
6	AS08	38.8	1.9	23.7	0.7	3.6	1.0	0.7	ND	3.9	3.3
					Dark Control Samples						
0	A	98.7	0.4	93.5	0.8	0.9	ND	1.4	ND	ND	1.8
0	B	98.6	0.4	95.1	ND	0.5	ND	1.4	ND	ND	1.3
1	DC03	90.2	0.0	85.6	2.2	0.5	ND	ND	ND	0.0	2.0
1	DC06	90.5	0.3	83.7	2.6	1.6	ND	ND	ND	0.0	2.2
2	DC04	86.6	0.3	77.4	5.2	1.3	0.7	ND	ND	0.4	1.2
2	DC02	88.6	0.2	77.6	1.2	1.5	1.8	ND	ND	1.8	4.6
4	DC07	80.6	1.3	67.5	0.6	1.3	1.7	0.7	ND	4.4	3.1
4	DC10	81.0	0.7	67.7	0.7	1.1	1.3	ND	ND	3.1	6.2
5	DC01	73.2	0.7	59.4	0.7	2.4	0.9	ND	ND	5.9	3.2
5	DC09	76.1	0.9	64.8	0.5	3.0	0.4	0.5	ND	4.0	2.2
6	DC05	73.6	1.5	59.2	1.0	2.8	0.6	ND	ND	4.2	4.2
6	DC08	73.6	1.3	61.1	0.7	3.4	0.4	ND	ND	4.2	2.6

ND None detected.

Table F-V

Individual Relative Distribution of Radioactivity Expressed as the Percentage of Radioactivity Detected on the TLC Plate for the Acetone:0.1N HCl (9:1) Extract of the Artificial Sunlight-Irradiated and Dark Control Samples

Sample Interval (Day)	Sample Number	Acetone: 0.1N HCl Extracts	Percentage of Radioactivity Applied to TLC Plate								
			S-53482		IMOXA		APF/482-HA				
			Origin	Parent	Peak 1	Peak 2	Peak 3	Peak 4	Peak 5	Streak	Diffuse
			Artificial Sunlight-Irradiated Samples								
0	A	3.6	6.4	76.3	1.4	2.3	2.6	ND	ND	5.8	5.2
0	B	3.1	13.4	76.1	0.7	0.0	2.9	ND	ND	0.0	6.8
1	AS03	6.9	16.7	65.1	2.9	ND	ND	ND	ND	6.1	9.2
1	AS09	7.1	19.8	62.2	5.5	ND	ND	ND	ND	12.5	0.0
2	AS10	8.5	18.9	56.6	4.4	ND	ND	ND	ND	11.1	8.9
2	AS01	7.7	13.8	61.8	5.6	ND	ND	ND	ND	9.0	9.8
4	AS02	9.1	22.5	41.7	ND	2.5	ND	3.1	ND	22.4	7.9
4	AS04	9.0	24.3	41.8	ND	2.2	ND	4.1	ND	17.5	10.1
5	AS06	8.1	18.3	44.1	ND	4.3	ND	1.0	ND	18.3	14.1
5	AS07	9.1	18.2	39.0	ND	3.1	ND	8.5	ND	23.7	7.1
6	AS05	9.9	18.4	38.5	ND	5.8	ND	ND	ND	22.8	14.5
6	AS08	9.0	18.7	39.2	ND	6.5	ND	ND	ND	27.2	8.4
			Dark Control Samples								
0	A	3.6	6.4	76.3	1.4	2.3	2.6	ND	ND	5.8	5.2
0	B	3.1	13.4	76.1	0.7	0.0	2.9	ND	ND	0.0	6.8
1	DC03	8.3	3.2	92.8	ND	ND	ND	ND	ND	ND	3.9
1	DC06	8.0	9.7	89.9	ND	ND	ND	ND	ND	ND	2.1
2	DC04	7.1	12.2	73.9	4.1	ND	ND	ND	ND	3.8	5.9
2	DC02	7.7	8.8	82.0	4.1	ND	2.1	ND	ND	0.0	3.1
4	DC07	11.7	12.5	60.3	ND	1.8	0.8	1.9	ND	13.1	9.7
4	DC10	10.8	10.0	72.0	ND	1.5	1.2	ND	ND	8.2	7.1
5	DC01	14.5	8.1	67.8	1.8	2.3	0.7	ND	ND	8.7	10.7
5	DC09	14.2	4.5	68.5	1.4	4.3	1.1	ND	ND	9.1	11.0
6	DC05	11.7	7.0	62.1	1.5	6.9	0.5	ND	2.8	9.0	10.1
6	DC08	13.3	6.1	68.2	3.0	4.6	1.6	ND	2.4	5.4	8.6

ND None detected.

Table F-VI

Mean Relative Distribution of Radioactivity Expressed as the Percentage of Radioactivity Detected on the TLC Plate for the Acetone:0.1N HCl (9:1) Extract of the Artificial Sunlight-Irradiated and Dark Control Samples[a]

Sample Interval (Day)	Acetone: 0.1N HCl Extracts	Percentage of Radioactivity Applied to TLC Plate								
		Origin	S-53482 Parent	IMOXA Peak 1	IMOXA Peak 2	APF/482-HA Peak 3	APF/482-HA Peak 4	Peak 5	Streak	Diffuse
				Artificial Sunlight-Irradiated Samples						
0	3.4	9.9	76.2	1.1	1.2	2.8	ND	ND	2.9	6.0
1	7.0	18.3	63.7	4.2	ND	ND	ND	ND	9.3	4.6
2	8.1	16.4	59.2	5.0	ND	ND	ND	ND	10.1	9.4
4	9.1	23.4	41.8	ND	2.4	ND	3.6	ND	20.0	9.0
5	8.6	18.3	41.6	ND	3.7	ND	4.8	ND	21.0	10.6
6	9.5	18.6	38.9	ND	6.2	ND	ND	ND	25.0	11.5
				Dark Control Samples						
0	3.4	9.9	76.2	1.1	1.2	2.8	ND	ND	2.9	6.0
1	8.2	6.5	91.4	ND	ND	ND	ND	ND	ND	3.0
2	7.4	10.5	78.0	4.1	ND	1.1	ND	ND	1.9	4.5
4	11.3	11.3	66.2	ND	1.7	1.0	1.0	ND	10.7	8.4
5	14.4	6.3	68.2	1.6	3.3	0.9	ND	ND	8.9	10.9
6	12.5	6.6	65.2	2.3	5.8	1.1	ND	2.6	7.2	9.4

ND None detected.

a Mean of duplicate values in Table F-IV.

Table F-VII

Individual TLC Distribution of Radioactivity for the Acetone:0.1N HCl (9:1) Extract Expressed as the Percentage of Radioactivity Applied to the Artificial Sunlight-Irradiated and Dark Control Samples

Sample Interval (Day)	Sample Number	Acetone: 0.1N HCl Extracts	S-53482		IMOXA		APF/482-HA				
			Origin	Parent	Peak 1	Peak 2	Peak 3	Peak 4	Peak 5	Streak	Diffuse
Artificial Sunlight-Irradiated Samples											
0	A	3.6	0.2	2.7	0.1	0.1	0.1	ND	ND	0.2	0.2
0	B	3.1	0.4	2.4	0.0	0.0	0.1	ND	ND	0.0	0.2
1	AS03	6.9	1.2	4.5	0.2	ND	ND	ND	ND	0.4	0.6
1	AS09	7.1	1.4	4.4	0.4	ND	ND	ND	ND	0.9	0.7
2	AS10	8.5	1.6	4.8	0.4	ND	ND	ND	ND	0.9	0.8
2	AS01	7.7	1.1	4.8	0.4	ND	ND	ND	ND	0.7	0.8
4	AS04	9.0	2.2	3.8	ND	0.2	ND	0.4	ND	1.6	0.9
4	AS02	9.1	2.0	3.8	ND	0.2	ND	0.3	ND	2.0	0.7
5	AS07	9.1	1.7	3.5	ND	0.3	ND	0.8	ND	2.2	0.6
5	AS06	8.1	1.5	3.6	ND	0.3	ND	0.1	ND	1.5	1.1
6	AS05	9.9	1.8	3.8	ND	0.6	ND	ND	ND	2.3	1.4
6	AS08	9.0	1.7	3.5	ND	0.6	ND	ND	ND	2.4	0.8
Dark control Samples											
0	A	3.6	0.2	2.7	0.1	0.1	0.1	ND	ND	0.2	0.2
0	B	3.1	0.4	2.4	0.0	0.0	0.1	ND	ND	0.0	0.2
1	DC03	8.3	0.3	7.7	ND	ND	ND	ND	ND	ND	0.3
1	DC06	8.0	0.8	7.2	ND	ND	ND	ND	ND	ND	0.2
2	DC04	7.1	0.9	5.2	0.3	ND	ND	ND	ND	0.3	0.4
2	DC02	7.7	0.7	6.3	0.3	ND	0.2	ND	ND	0.0	0.2
4	DC07	11.7	1.5	7.1	ND	0.2	0.1	0.2	ND	1.5	1.1
4	DC10	10.8	1.1	7.8	ND	0.2	0.1	ND	ND	0.9	0.8
5	DC01	14.5	1.2	9.8	0.3	0.3	0.1	ND	ND	1.3	1.6
5	DC09	14.2	0.6	9.7	0.2	0.6	0.2	ND	ND	1.3	1.6
6	DC05	11.7	0.8	7.3	0.2	0.8	0.1	ND	0.3	1.1	1.1
6	DC08	13.3	0.8	9.1	0.4	0.6	0.2	ND	0.3	0.7	1.2

ND None detected.