

**Data Evaluation Report on the Adsorption-Desorption of Orthosulfamuron (IR5878) in Soil**

PMRA Submission Number {.....}

EPA MRID Number 46219074

**Data Requirement:** PMRA Data Code:  
EPA DP Barcode: D304186  
OECD Data Point:  
EPA Guideline: 163-1

**Test material:**

Common Name: Orthosulfamuron.

**Chemical Name**

IUPAC name: 1-(4,6-Dimethoxypyrimidin-2-yl)-3-[2-(dimethylcarbamoyl)phenylsulfamoyl]urea.

CAS name: 2-[[[(4,6-Dimethoxy-2-pyrimidinyl)amino]carbonyl]amino]sulfonylamino]-N,N-dimethylbenzamide.

CAS No: 213464-77-8

Synonyms: IR5878.

SMILES string: CN(C(=O)c1ccccc1NS(=O)(=O)NC(=O)Nc1nc(cc(n1)OC)OC)C.

**Primary Reviewer:** Kindra Bozicevich  
Dynamac Corporation

**Signature:**

**Date:**

**QC Reviewer:** Joan Harlin  
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**Secondary Reviewer:** Greg Orrick  
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**Date:** August 25, 2006

**Company Code:**

**Active Code:**

**Use Site Category:**

**EPA PC Code:** 108209

**CITATION:** Scacchi, A. and G. Pizzingrilli. 2000. Adsorption-desorption of <sup>14</sup>C-IR5878 in Soil. Unpublished study performed by Isagro Ricerca Srl, Novara, Italy; sponsored and submitted by Isagro SpA, Milano, Italy. Study Number: ABT.00.04. Experiment initiation February 10, 2000 and completion March 14, 2000. Final report issued April 10, 2000. 129 pp.

  
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**Primary Reviewer:** Kindra Bozicevich  
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**Signature:** *Kindra Bozicevich*  
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**QC Reviewer:** Joan Harlin  
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### EXECUTIVE SUMMARY:

The adsorption/desorption characteristics of [<sup>14</sup>C-U-phenyl]-labeled 1-(4,6-dimethoxyypyrimidin-2-yl)-3-[2-(dimethylcarbamoyl)phenylsulfamoyl]urea (orthosulfamuron; IR5878), were studied in four Italian soils: a sandy loam soil [pH 6.29, organic carbon 1.33%], two silt loam soils [pH 5.71, organic carbon 2.03% and pH 6.78, organic carbon 1.00%], and a clay loam soil [pH 7.98, organic carbon 2.30%], in a batch equilibrium experiment. The experiment was conducted in accordance with Council Directive 91/414/EEC, OECD Guideline 106, and SETAC guidelines, and in compliance with Italian Principles of Good Laboratory Practice. The adsorption phase of the study was carried out by equilibrating air-dried soil with [<sup>14</sup>C]orthosulfamuron at nominal test concentrations of 0.28, 1.4, 7.0, and 35.0 mg a.i./kg soil for all test soils. The soils were equilibrated for 2 hours at 20 ± 2°C; lighting conditions were not reported. The equilibrating solution used was 0.01M CaCl<sub>2</sub> with soil:solution ratios of 1:7 (w:v) for all test soils. The desorption phase of the study was carried out by replacing most of the adsorption solution with an equivalent volume of 0.01M CaCl<sub>2</sub> solution and equilibrating for 2 hours at 20 ± 2°C; lighting conditions were not reported. Four desorption cycles were conducted for all test soils.

The supernatant solution after adsorption and four desorption cycles was separated by centrifugation and duplicate aliquots were analyzed for total radioactivity using LSC. Following desorption, high-dose soils were extracted with an acetonitrile:water solution (7:3, v:v). Duplicate aliquots of the high-dose extracts were analyzed for total radioactivity using LSC. The extracted soils were combusted prior to LSC analysis.

Supernatant and extract samples were not analyzed for parent compound. The mass balance at the end of the adsorption phase was not reported. Mean mass balances at the end of the fourth desorption cycle were 95.55%, 95.53%, 93.01%, and 96.10% of the applied for the high-dose (35.0 mg a.i./kg soil) B-1 sandy loam, G-2 silt loam, M-2 silt loam, and VM-1 clay loam soils, respectively.

After 2 hours of equilibrium, 25.0-59.8%, 43.2-61.4%, 40.9-51.4%, and 44.0-49.9% of the applied [<sup>14</sup>C]orthosulfamuron was adsorbed to the B-1 sandy loam, G-2 silt loam, M-2 silt loam, and VM-1 clay loam soils, respectively. Freundlich  $K_{ads}$  values were 3.76, 6.62, 5.47, and 5.72 for the B-1 sandy loam, G-2 silt loam, M-2 silt loam, and VM-1 clay loam soils, respectively; corresponding Freundlich exponent values (1/n) were 0.751, 0.856, 0.920, and 0.955. Respective adsorption  $K_{oc}$  values were 283, 326, 547, and 249. At the end of the desorption phase, 47.4-75.7%, 47.6-63.5%, 42.6-52.0%, and 75.6-79.6% of the [<sup>14</sup>C]orthosulfamuron remaining with the soil samples at the end of the adsorption phase was desorbed from the B-1 sandy loam, G-2 silt loam, M-2 silt loam, and VM-1 clay loam soils, respectively. Freundlich  $K_{des}$  values were 35.8, 32.0, 141, and 20.3 for the B-1 sandy loam, G-2 silt loam, M-2 silt loam, and VM-1 clay loam soils, respectively; corresponding 1/n values were 0.902, 0.935, 1.074, and 1.033. Respective desorption  $K_{oc}$  values were 2690, 1580, 14100, and 882.

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## Results Synopsis:

### Adsorption:

| Soil           | Amount adsorbed (% of the applied) | $K_d$           | $K_f$ | 1/n   | $R^2$ | $K_{roc}$ |
|----------------|------------------------------------|-----------------|-------|-------|-------|-----------|
| B-1 sandy loam | 25.0-59.8%                         | $6.01 \pm 3.20$ | 3.76  | 0.751 | 0.976 | 283       |
| G-2 silt loam  | 43.2-61.4%                         | $8.62 \pm 2.46$ | 6.62  | 0.856 | 0.993 | 326       |
| M-2 silt loam  | 40.9-51.4%                         | $6.26 \pm 1.45$ | 5.47  | 0.920 | 0.990 | 547       |
| VM-1 clay loam | 44.0-49.9%                         | $6.11 \pm 0.63$ | 5.72  | 0.955 | 0.999 | 249       |

### Desorption:

| Soil           | Amount desorbed (% of the non-decanted) | $K_d$           | $K_f$ | 1/n   | $R^2$ | $K_{roc}$ |
|----------------|---|-----------------|-------|-------|-------|-----------|
| B-1 sandy loam | 47.4-75.7%                              | $58.0 \pm 17.6$ | 35.8  | 0.902 | 0.964 | 2690      |
| G-2 silt loam  | 47.6-63.5%                              | $42.8 \pm 12.2$ | 32.0  | 0.935 | 0.978 | 1580      |
| M-2 silt loam  | 42.6-52.0%                              | $105 \pm 35$    | 141   | 1.074 | 0.971 | 14100     |
| VM-1 clay loam | 75.6-79.6%                              | $18.1 \pm 3.0$  | 20.3  | 1.033 | 0.993 | 882       |

**Study Acceptability:** This study is classified as **supplemental**. It does not fulfill the Subdivision N Guideline §163-1 data requirements for a batch equilibrium study because: (i) material balances were determined for the highest test concentrations for all test soils, rather than for all test concentrations; (ii) none of the test soils had an organic matter content of <1%; (iii) adsorption phase supernatants were not adequately decanted and volumes were not reported.

## I. MATERIALS AND METHODS:

**GUIDELINE FOLLOWED:** The study was conducted in accordance with Council Directive 91/414/EEC, Part A of Annex II, Section 7, amended by Council Directive 95/36/EEC, Annex I, Section 7.1; Society of Environmental Toxicology and Chemistry, Part I, Section 4 "Soil adsorption-desorption" (1995); and the OECD Guideline for Testing of Chemicals No. 106 (1981; p. 13). Significant deviations from Subdivision N guidelines included:

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Material balances were determined only for the highest test concentration for all test soils, rather than for all test concentrations/test soil treatment groups.

None of the test soils had an organic matter content of <1%.

Supernatants were not adequately decanted and supernatant volumes were not reported during the adsorption phase.

**COMPLIANCE:**

The study was conducted in compliance with Italian Principles of Good Laboratory Practice, under Legislative Decree, No 120-88/320CEE Directive (1992; pp. 3, 6; Appendix 7, pp. 128-129). Signed and dated Data Confidentiality, GLP, Quality Assurance, and Declaration and Signatures statements were provided (pp. 2-3, 6, 8-9; Appendix 7, pp. 128-129).

**A. MATERIALS:**

**1. Test Material**

[<sup>14</sup>C-U-Phenyl]orthosulfamuron (IR5878; p. 15).

**Chemical Structure:**

See DER Attachment 1.

**Description:**

Not reported.

**Purity:**

**Radiolabeled:**

Analytical purity: Not reported.

Radiochemical purity: >97% (by TLC; p. 15).

Lot No.: 182.

Specific activity: 5.70 MBq/mg (154.06 μCi/mg; 342008 dpm/μg).

Location of the label: Uniformly in the phenyl ring.

**Non-radiolabeled:**

Analytical purity: Not applicable.

Lot No.: Not applicable.

**Storage conditions of test chemicals:**

The radiolabeled test substance was stored at -20°C prior to use (p. 16).

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## Physico-chemical properties of orthosulfamuron (IR5878):

| Parameter                                 | Values  | Comments |
|---|---|----------|
| Water solubility                          | Not reported.   |          |
| Vapour pressure                           | Not reported.   |          |
| UV absorption                             | Not reported.   |          |
| Molecular Formula                         | C <sub>16</sub> H <sub>20</sub> N <sub>6</sub> O <sub>6</sub> S |          |
| Molecular Weight                          | 424.44 g/mol  |          |
| Bulk density                              | Not reported.   |          |
| pK <sub>a</sub>                           | Not reported.   |          |
| K <sub>ow</sub>                           | Not reported.   |          |
| Stability of Compound at room temperature | Not reported.   |          |

Data were obtained from p. 15 of the study report.

## 2. Soil Characteristics

**Table 1: Description of soil collection and storage.**

| Description                                  | B-1 Sandy loam            | G-2 Silt loam             | M-2 Silt loam             | VM-1 Clay loam            |
|--|---------------------------|---------------------------|---------------------------|---------------------------|
| Geographic location <sup>1</sup>             | Italy                     | Italy                     | Italy                     | Italy                     |
| Pesticide use history at the collection site | Not reported.             | Not reported.             | Not reported.             | Not reported.             |
| Collection procedures                        | Not reported.             | Not reported.             | Not reported.             | Not reported.             |
| Sampling depth (cm)                          | 20                        | 20                        | 20                        | 20                        |
| Storage conditions                           | Stored at 4°C.            | Stored at 4°C.            | Stored at 4°C.            | Stored at 4°C.            |
| Storage length <sup>2</sup>                  | ca. 3 months              | ca. 3 months              | ca. 3 months              | ca. 3 months              |
| Soil preparation                             | Air dried; sieved (2 mm). |

Data were obtained from p. 16; Table 1, p. 32; and Appendix 3, pp. 70-73a of the study report.

<sup>1</sup> The test soils were supplied by RESET Srl located in Bologna, Italy; however, specific sampling locations for each test soil were not provided. The source for all test soils was Novara.

<sup>2</sup> The storage length was determined as the interval between the date received at the test laboratory (November 1999) and experiment initiation (February 2000).

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**Table 2: Properties of the soils.**

| Property                        | B-1           | G-2           | M-2           | VM-1          |
|---------------------------------|---------------|---------------|---------------|---------------|
| Soil Texture (USDA)             | Sandy loam    | Silt loam     | Silt loam     | Clay loam     |
| % sand (50-2000 $\mu\text{m}$ ) | 62            | 28.3          | 37            | 24.3          |
| % silt (2-50 $\mu\text{m}$ )    | 32.3          | 54.4          | 54.3          | 46.7          |
| % clay (<2 $\mu\text{m}$ )      | 5.7           | 17.3          | 8.7           | 29.0          |
| pH (0.01M CaCl <sub>2</sub> )   | 6.29          | 5.71          | 6.78          | 7.98          |
| Organic carbon (%)              | 1.33          | 2.03          | 1.00          | 2.30          |
| Organic matter (%) <sup>1</sup> | 2.29          | 3.49          | 1.72          | 3.96          |
| CEC (meq/100 g)                 | 7.65          | 12.17         | 10.7          | 20.06         |
| Moisture at 1/3 bar (g/100 g)   | 16.68         | 31.66         | 21.58         | 30.85         |
| Bulk density (gm/cc)            | Not reported. | Not reported. | Not reported. | Not reported. |
| Biomass (CFU/g soil)            | Not reported. | Not reported. | Not reported. | Not reported. |
| Soil taxonomic classification   | Not reported. | Not reported. | Not reported. | Not reported. |
| Soil mapping unit (for EPA)     | Not reported. | Not reported. | Not reported. | Not reported. |

Data were obtained from p. 16; Table 1, p. 32; and Appendix 3, pp. 70-73a of the study report.

<sup>1</sup> Percent organic matter was calculated as follows: % organic carbon  $\div$  1.724.

## B. STUDY DESIGN:

**1. Preliminary study:** Preliminary experiments were conducted to determine the appropriate equilibrium time and number of desorption cycles to be used in the definitive study, and to determine the stability of the test material during the preliminary adsorption phase (pp. 17, 20).

Prior to the initiation of the preliminary experiments, a test solution (A-1) was prepared by dissolving a *ca.* 1200  $\mu\text{g}$  aliquot of [<sup>14</sup>C-U-phenyl]orthosulfamuron in 238  $\mu\text{L}$  of acetonitrile and 170 mL of 0.01M CaCl<sub>2</sub> solution, to establish a nominal test concentration of 7  $\mu\text{g}/\text{mL}$  (p. 17). Four aliquots of the test solution were analyzed for total radioactivity using LSC (p. 25). The actual test concentration was determined to be 7.019  $\mu\text{g}/\text{mL}$ , corresponding to a final concentration of 5.014  $\mu\text{g}/\text{mL}$  (12,003,000 dpm/sample) in the preliminary test samples (Appendix 5, Table I, p. 82).

To determine the adsorption equilibrium time to be used in the definitive study, 1-g aliquots of each test soil were pre-equilibrated with 2 mL of 0.01M CaCl<sub>2</sub> solution for 24 hours at 20  $\pm$  2°C (pp. 18, 20). The test soils were then treated with [<sup>14</sup>C-U-phenyl]orthosulfamuron at a nominal test concentration of 5  $\mu\text{g}/\text{mL}$ , and incubated at 20  $\pm$  2°C; lighting conditions were not reported. Following 10 and 30 minutes, and 1, 2, 4, 8, and 16 hours of incubation, the samples were

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centrifuged for 10 minutes and aliquots of the supernatants were analyzed for total radioactivity using LSC (pp. 19-20). Aliquots (10  $\mu$ L) of the adsorption supernatant samples were analyzed by one-dimensional TLC on reverse-phase plates (RP-18 Merck Kieselgel 60 F<sub>254S</sub> plates, 0.25-mm thickness) developed in acetonitrile:water (92:8, v:v; Solvent System 1), and on normal-phase plates (silica gel Merck Kieselgel 60 F<sub>254</sub> plates, 0.25 mm thick) developed in chloroform:methanol:ammonium hydroxide (70:27:3, v:v:v; Solvent System 3; pp. 18, 20, 23). Following development, areas of radioactivity were detected and quantified using a Fuji BAS 1500 Bio-Imaging Analyzer, with two-dimensional images generated using a Fuji BAS 1500 Autoradiographic Imaging System. After 2 hours of shaking, 43.33%, 47.73%, 45.07%, and 43.91% of the applied radioactivity was adsorbed to the B-1 sandy loam, G-2 silt loam, M-2 silt loam, and VM-1 clay loam soils, respectively (p. 25; Table 2, p. 33; Figures 1-4, pp. 42-45; Appendix 5, Tables II-V, pp. 83-86). [<sup>14</sup>C]Orthosulfamuron comprised 47.09-53.22% of the applied radioactivity in the 2-hour adsorption supernatant samples (Appendix 6, Table XXXVI/b, p. 117; Figures I-IV, pp. 118-121; and Figure IX, p. 126).

To determine the stability of the test material during adsorption, the 2-hour adsorption samples were extracted with 25 mL of an acetonitrile:water mixture (7:3, v:v; p. 20), and aliquots (10  $\mu$ L) of the extracts were analyzed by one-dimensional TLC using Solvent System 3 (p. 23). The results were confirmed via one-dimensional TLC using Solvent System 1 (p. 27). The extracted soils were analyzed for total radioactivity using LSC following combustion (pp. 19-20). [<sup>14</sup>C]Orthosulfamuron comprised >89% of the applied radioactivity in the 2-hour adsorption supernatant samples plus soil extracts (p. 27; Appendix 6, Table XXXVI/b, p. 117; Figures I-X, pp. 118-127). Of the total applied radioactivity, 47.09-53.22% was associated with the supernatants, and 40.03-47.04% was associated with the soil extracts.

To determine the number of desorption cycles to be used in the definitive study, an equal volume of 0.01M CaCl<sub>2</sub> solution was added to the 8-hour adsorption samples for each test soil (p. 20). The samples were incubated at 20  $\pm$  2°C; lighting conditions not reported (pp. 19-20). After 2 hours of incubation, the samples were centrifuged for 10 minutes, and aliquots of the supernatants were analyzed for total radioactivity using LSC. Four desorption cycles were conducted. The amount of desorbed [<sup>14</sup>C]orthosulfamuron as a percent of the adsorbed was 28.56%, 41.16%, 25.78%, and 61.25% for the B-1 sandy loam, G-2 silt loam, M-2 silt loam, and VM-1 clay loam soils, respectively (pp. 25-26; Appendix 5, Tables VI-IX, pp. 87-91).

Based on the results of the preliminary studies, an equilibration time of 2 hours and four desorption cycles were selected for use in the definitive study (p. 25). The test substance was confirmed to be stable in the adsorption supernatants and acetonitrile:water extracts (Appendix 6, Figures IX-X, pp. 126-127).

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## 2. Definitive study experimental conditions:

**Table 3: Study design for the adsorption phase.**

| Parameters   |  | B-1 Sandy loam              | G-2 Silt loam               | M-2 Silt loam               | VM-1 Clay loam              |
|--|--|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| Condition of soil (air dried/fresh) <sup>1</sup>                                   |  | Air dried.                  | Air dried.                  | Air dried.                  | Air dried.                  |
| Have these soils been used for other laboratory studies ? (specify which)          |  | No                          | No                          | No                          | No                          |
| Soil (g/replicate)   |  | 1                           | 1                           | 1                           | 1                           |
| Equilibrium solution used (name and concentration; e.g., 0.01N CaCl <sub>2</sub> ) |  | 0.01M CaCl <sub>2</sub>     | 0.01M CaCl <sub>2</sub>     | 0.01M CaCl <sub>2</sub>     | 0.01M CaCl <sub>2</sub>     |
| Control used (with salt solution only) (Yes/No)                                    |  | No                          | No                          | No                          | No                          |
| Test material concentrations <sup>2</sup>  | Nominal application rates (mg a.i./kg soil)            | 0.28, 1.4, 7.0, 35.0        | 0.28, 1.4, 7.0, 35.0        | 0.28, 1.4, 7.0, 35.0        | 0.28, 1.4, 7.0, 35.0        |
|  | Analytically measured concentrations (mg a.i./kg soil) | 0.321, 1.446, 7.463, 35.783 | 0.321, 1.446, 7.463, 35.783 | 0.321, 1.446, 7.463, 35.783 | 0.321, 1.446, 7.463, 35.783 |
| Identity and concentration of co-solvent, if any)                                  |  | Acetonitrile, 0.14%         | Acetonitrile, 0.14%         | Acetonitrile, 0.14%         | Acetonitrile, 0.14%         |
| Soil:solution ratio  |  | 1:7                         | 1:7                         | 1:7                         | 1:7                         |
| Initial pH of the equilibration solution, if provided                              |  | Not reported.               | Not reported.               | Not reported.               | Not reported.               |
| No. of replications  | Controls   | 0                           | 0                           | 0                           | 0                           |
|  | Treatments   | 2                           | 2                           | 2                           | 2                           |
| Equilibration  | Time (hours)   | 2                           | 2                           | 2                           | 2                           |
|  | Temperature (°C)                                       | 20 ± 2                      | 20 ± 2                      | 20 ± 2                      | 20 ± 2                      |
|  | Darkness   | Not reported.               | Not reported.               | Not reported.               | Not reported.               |
|  | Shaking method   | Multi Stirrer               | Multi Stirrer               | Multi Stirrer               | Multi Stirrer               |
|  | Shaking time (hours)                                   | 2                           | 2                           | 2                           | 2                           |
| Method of separation of supernatant (e.g., centrifugation)                         |  | Centrifugation              | Centrifugation              | Centrifugation              | Centrifugation              |
| Centrifugation   | Speed (g)  | 7700                        | 7700                        | 7700                        | 7700                        |
|  | Duration (min)   | 10                          | 10                          | 10                          | 10                          |
|  | Method of separation of soil and solution              | Supernatant withdrawn       | Supernatant withdrawn       | Supernatant withdrawn       | Supernatant withdrawn       |

Data were obtained from pp. 17-20, 25; Appendix 1, p. 60; and Appendix 5, Table XIII, p. 94 of the study report.

<sup>1</sup> Prior to use, 1 g aliquots of each test soil were pre-equilibrated by stirring in 2 mL of 0.01M CaCl<sub>2</sub> solution for 24 hours at 20 ± 2°C (p. 18).

<sup>2</sup> Test material concentrations were calculated by converting µg/mL to mg a.i./kg using the following equation: [test concentration (µg/mL) x total volume of test material solution (mL)] / amount of soil (g); e.g. [0.04 µg/mL x 7 mL] / 1.0 g soil = 0.28 mg a.i./kg soil.

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**Table 4: Study design for the desorption phase.**

| Parameters  |  | B-1 Sandy loam          | G-2 Silt loam           | M-2 Silt loam           | VM-1 Clay loam          |
|---|--|-------------------------|-------------------------|-------------------------|-------------------------|
| Were the soil residues from the adsorption phase used? If not, describe the method for adsorption using a separate adsorption Table |  | Yes                     | Yes                     | Yes                     | Yes                     |
| Amount of test material present in the adsorbed state/adsorbed amount (mg a.i./kg soil)   | 0.28   | 0.191                   | 0.197                   | 0.165                   | 0.160                   |
|   | 1.4  | 0.607                   | 0.842                   | 0.725                   | 0.666                   |
|   | 7.0  | 3.486                   | 3.996                   | 3.053                   | 3.432                   |
|   | 35.0   | 8.951                   | 15.469                  | 15.815                  | 15.740                  |
| No. of desorption cycles  |  | 4                       | 4                       | 4                       | 4                       |
| Equilibration solution and quantity used per treatment for desorption (e.g., 0.01M CaCl <sub>2</sub> )                              |  | 0.01M CaCl <sub>2</sub> | 0.01M CaCl <sub>2</sub> | 0.01M CaCl <sub>2</sub> | 0.01M CaCl <sub>2</sub> |
| Soil:solution ratio   |  | 1:7                     | 1:7                     | 1:7                     | 1:7                     |
| Replications  | Controls   | 0                       | 0                       | 0                       | 0                       |
|   | Treatments   | 2                       | 2                       | 2                       | 2                       |
| Desorption equilibrium  | Time (hours)   | 2                       | 2                       | 2                       | 2                       |
|   | Temperature (°C)   | 20 ± 2                  | 20 ± 2                  | 20 ± 2                  | 20 ± 2                  |
|   | Darkness   | Not reported.           | Not reported.           | Not reported.           | Not reported.           |
|   | Shaking method   | Multi Stirrer           | Multi Stirrer           | Multi Stirrer           | Multi Stirrer           |
|   | Shaking time (hours)   | 2                       | 2                       | 2                       | 2                       |
| Centrifugation  | Speed (g)  | 7700                    | 7700                    | 7700                    | 7700                    |
|   | Duration (min)   | 10                      | 10                      | 10                      | 10                      |
|   | Method of separation of soil and solution                        | Not reported.           | Not reported.           | Not reported.           | Not reported.           |
| Second-Fourth desorption  | Indicate if the method is the same as the first desorption cycle | Same.                   | Same.                   | Same.                   | Same.                   |

Data were obtained from pp. 17, 19-20 and Tables 3-6, pp. 34-37 of the study report.

### 3. Description of analytical procedures:

**Extraction/clean up/concentration methods:** Following desorption, high-dose soils (35.0 mg a.i./kg soil) were extracted with 25 mL of an acetonitrile:water solution (7:3, v:v; pp. 19-20).

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**Total <sup>14</sup>C measurement:** Following adsorption and four desorption cycles, duplicate 0.1-0.5 mL aliquots of the supernatants were analyzed for total radioactivity using LSC (pp. 19, 22). Following extraction, duplicate 0.1-1.0 mL aliquots of the high-dose desorption supernatants were analyzed for total radioactivity using LSC. In addition, the soils were combusted and aliquots were analyzed for total radioactivity using LSC. The combustion efficiency was >95%; radioactivity in the combusted residues was corrected for combustion efficiency (p. 23; Appendix 5, Table XXXVa, p. 116). For LSC analyses, the limit of detection (LOD) and limit of quantification (LOQ) were not reported. The accepted variability coefficient for LSC analysis was <3% (p. 22). Mass balances were determined for high-dose soils (35.0 mg a.i./kg soil) by summing radioactivity recovered in the liquid phases following adsorption, four desorption cycles, and extraction with soil combustion data (p. 24).

**Non-extractable residues, if any:** Samples were not analyzed for non-extractable residues following adsorption. High dose soils following adsorption and four desorption cycles were combusted and analyzed using LSC, as described above (p. 22).

**Derivatization method, if used:** A derivatization method was not employed in the study.

**Identification and quantification of parent compound:** Samples were not analyzed for orthosulfamuron.

**Identification and quantification of transformation products, if appropriate:** Samples were not analyzed for transformation products of orthosulfamuron.

**Detection limits (LOD, LOQ) for parent compound:** Samples were not analyzed for orthosulfamuron.

**Detection limits (LOD, LOQ) for the transformation products:** Samples were not analyzed for transformation products of orthosulfamuron.

## II. RESULTS AND DISCUSSION:

**A. TEST CONDITIONS:** The incubation temperature during the study was reported as 20 ± 2°C; no supporting information was provided (pp. 17, 19). The pH values of the test solutions during the study were not reported. Supernatant samples and extracts from the definitive experiment were not analyzed for parent compound. In a preliminary experiment, [<sup>14</sup>C]orthosulfamuron accounted for >89% of the applied radioactivity in the 2-hour adsorption supernatant samples plus extracts, analyzed by one-dimensional TLC analysis (p. 27; Appendix 6, Table XXXVI/b, p. 117 and Figures I-IX, pp. 118-127).

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**B. MASS BALANCE:** The mass balance at the end of the adsorption phase was not reported. Mean mass balances at the end of the fourth desorption cycle were 95.55%, 95.53%, 93.00%, and 96.09% of the applied for the high-dose (35.0 mg a.i./kg soil) B-1 sandy loam, G-2 silt loam, M-2 silt loam, and VM-1 clay loam soils, respectively (p. 27; Table 8, p. 39).

**Table 5: Recovery of [<sup>14</sup>C-U-phenyl]orthosulfamuron, expressed as percentage of applied radioactivity, after adsorption/desorption for high-dose soils (n = 2; mean ± s.d.).**

| Matrices                                      | B-1 Sandy loam  | G-2 Silt loam | M-2 Silt loam | VM-1 Clay loam |
|---|-----------------|---------------|---------------|----------------|
| <b>At the end of the adsorption phase</b>     |                 |               |               |                |
| Supernatant solution                          | 74.99 ± 1.53    | 56.77 ± 8.13  | 55.93 ± 0.04  | 56.01 ± 1.17   |
| Solid phase (total <sup>14</sup> C)           | Not analyzed.   |               |               |                |
| Non-extractable residues in soil, if measured | Not measured.   |               |               |                |
| Total recovery                                | Not determined. |               |               |                |
| <b>At the end of the desorption phase</b>     |                 |               |               |                |
| Supernatant solution                          | 15.65 ± 0.06    | 23.19 ± 0.26  | 12.66 ± 0.71  | 31.51 ± 1.12   |
| Solid phase (extracted) <sup>1</sup>          | 2.19 ± 0.30     | 8.75 ± 4.06   | 5.48 ± 0.33   | 5.34 ± 0.47    |
| Non-extractable residues in soil, if measured | 2.73 ± 0.64     | 6.83 ± 4.79   | 18.95 ± 1.04  | 3.24 ± 0.76    |
| Total recovery                                | 95.55 ± 0.65    | 95.53 ± 0.45  | 93.01 ± 0.05  | 96.10 ± 0.35   |

Data were obtained from Table 8, p. 39; Appendix 5, Table XXXIV, p. 115; and Appendix 5, Table XXXVb, p. 116 of the study report.

<sup>1</sup> High-dose soils were extracted prior to combustion.

**C. ADSORPTION:** After 2 hours of equilibrium, 25.0-59.8%, 43.2-61.4%, 40.9-51.4%, and 44.0-49.9% of the applied [<sup>14</sup>C]orthosulfamuron was adsorbed to the B-1 sandy loam, G-2 silt loam, M-2 silt loam, and VM-1 clay loam soils, respectively (p. 26; Tables 3-6, pp. 34-37). Freundlich  $K_{ads}$  values were 3.76, 6.62, 5.47, and 5.72 for the B-1 sandy loam, G-2 silt loam, M-2 silt loam, and VM-1 clay loam soils, respectively; corresponding 1/n values were 0.751, 0.856, 0.920, and 0.955. Respective Freundlich adsorption  $K_{OC}$  values were 283, 326, 547, and 249 (Table 7, p. 38; Figures 5-8, pp. 46-49).

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**Table 6: Concentration of [<sup>14</sup>C-U-phenyl]orthosulfamuron in the solid and liquid phases at the end of adsorption equilibration period (n = 2; mean ± s.d.).**

| Concentration<br>(mg a.i./kg<br>soil) | B-1 Sandy loam          |                             |                            | G-2 Silt loam           |                             |                            |
|---------------------------------------|-------------------------|-----------------------------|----------------------------|-------------------------|-----------------------------|----------------------------|
|                                       | on soil<br>(mg a.i./kg) | in solution<br>(µg a.i./mL) | %<br>adsorbed <sup>1</sup> | on soil<br>(mg a.i./kg) | in solution<br>(µg a.i./mL) | %<br>adsorbed <sup>1</sup> |
| 0.28                                  | 0.19 ± 0.01             | 0.018 ± 0.002               | 59.8 ± 3.7                 | 0.20 ± 0.01             | 0.018 ± 0.001               | 61.4 ± 3.2                 |
| 1.4                                   | 0.61 ± 0.05             | 0.120 ± 0.007               | 42.0 ± 3.5                 | 0.84 ± 0.02             | 0.086 ± 0.002               | 58.3 ± 1.2                 |
| 7.0                                   | 3.49 ± 0.01             | 0.568 ± 0.001               | 46.7 ± 0.1                 | 4.00 ± 0.13             | 0.495 ± 0.019               | 53.5 ± 1.8                 |
| 35.0                                  | 8.95 ± 0.55             | 3.83 ± 0.08                 | 25.0 ± 1.5                 | 15.5 ± 2.9              | 2.90 ± 0.42                 | 43.2 ± 8.1                 |

| Concentration<br>(mg a.i./kg<br>soil) | M-2 Silt loam           |                             |                            | VM-1 Clay loam          |                             |                            |
|---------------------------------------|-------------------------|-----------------------------|----------------------------|-------------------------|-----------------------------|----------------------------|
|                                       | on soil<br>(mg a.i./kg) | in solution<br>(µg a.i./mL) | %<br>adsorbed <sup>1</sup> | on soil<br>(mg a.i./kg) | in solution<br>(µg a.i./mL) | %<br>adsorbed <sup>1</sup> |
| 0.28                                  | 0.16 ± 0.01             | 0.022 ± 0.002               | 51.4 ± 3.8                 | 0.16 ± 0.00             | 0.023 ± 0.000               | 49.9 ± 0.3                 |
| 1.4                                   | 0.72 ± 0.08             | 0.103 ± 0.011               | 50.1 ± 5.6                 | 0.67 ± 0.03             | 0.111 ± 0.005               | 46.0 ± 2.4                 |
| 7.0                                   | 3.05 ± 0.55             | 0.630 ± 0.079               | 40.9 ± 7.4                 | 3.43 ± 0.00             | 0.576 ± 0.000               | 46.0 ± 0.0                 |
| 35.0                                  | 15.8 ± 0.1              | 2.85 ± 0.01                 | 44.2 ± 0.2                 | 15.7 ± 0.4              | 2.86 ± 0.06                 | 44.0 ± 1.2                 |

Data were obtained from Tables 3-6, pp. 34-37 and Appendix 5, Tables XIV-XVII, pp. 95-98 of the study report.

<sup>1</sup> Percent adsorbed values are percent of the applied.

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**D. DESORPTION:** At the end of four desorption cycles, 47.4-75.7%, 47.6-63.5%, 42.6-52.0%, and 75.6-79.6% of the applied [<sup>14</sup>C]orthosulfamuron was desorbed from the B-1 sandy loam, G-2 silt loam, M-2 silt loam, and VM-1 clay loam soils, respectively (p. 27; Tables 3-6, pp. 34-37).

**Table 7: Concentration of [<sup>14</sup>C-U-phenyl]orthosulfamuron in the solid and liquid phases at the end of four desorption cycles (n = 2; mean ± s.d.).**

| Concentration (mg a.i./kg soil) | B-1 Sandy loam                    |                                       |                         | G-2 Silt loam                     |                                       |                         |
|---------------------------------|-----------------------------------|---------------------------------------|-------------------------|-----------------------------------|---------------------------------------|-------------------------|
|                                 | on soil <sup>1</sup> (mg a.i./kg) | in solution <sup>2</sup> (µg a.i./mL) | % desorbed <sup>3</sup> | on soil <sup>1</sup> (mg a.i./kg) | in solution <sup>2</sup> (µg a.i./mL) | % desorbed <sup>3</sup> |
| 0.28                            | 0.111 ± 0.017                     | 0.004 ± 0.000                         | 47.4 ± 5.1              | 0.113 ± 0.025                     | 0.005 ± 0.001                         | 47.6 ± 9.3              |
| 1.4                             | 0.255 ± 0.095                     | 0.021 ± 0.002                         | 65.7 ± 10.1             | 0.400 ± 0.033                     | 0.024 ± 0.002                         | 56.8 ± 3.6              |
| 7.0                             | 1.84 ± 0.63                       | 0.113 ± 0.033                         | 56.4 ± 14.9             | 1.61 ± 0.17                       | 0.126 ± 0.003                         | 63.5 ± 2.9              |
| 35.0                            | 3.27 ± 0.54                       | 0.452 ± 0.007                         | 75.7 ± 2.9              | 6.97 ± 2.98                       | 0.529 ± 0.028                         | 63.4 ± 11.1             |

| Concentration (mg a.i./kg soil) | M-2 Silt loam                     |                                       |                         | VM-1 Clay loam                    |                                       |                         |
|---------------------------------|-----------------------------------|---------------------------------------|-------------------------|-----------------------------------|---------------------------------------|-------------------------|
|                                 | on soil <sup>1</sup> (mg a.i./kg) | in solution <sup>2</sup> (µg a.i./mL) | % desorbed <sup>3</sup> | on soil <sup>1</sup> (mg a.i./kg) | in solution <sup>2</sup> (µg a.i./mL) | % desorbed <sup>3</sup> |
| 0.28                            | 0.108 ± 0.015                     | 0.004 ± 0.000                         | 44.4 ± 4.3              | 0.043 ± 0.001                     | 0.006 ± 0.000                         | 75.6 ± 0.8              |
| 1.4                             | 0.421 ± 0.118                     | 0.019 ± 0.001                         | 50.5 ± 8.6              | 0.153 ± 0.003                     | 0.029 ± 0.001                         | 79.6 ± 0.9              |
| 7.0                             | 1.79 ± 0.09                       | 0.088 ± 0.025                         | 52.0 ± 8.2              | 0.852 ± 0.042                     | 0.150 ± 0.003                         | 78.2 ± 1.0              |
| 35.0                            | 11.2 ± 0.3                        | 0.371 ± 0.021                         | 42.6 ± 2.1              | 4.21 ± 0.03                       | 0.670 ± 0.005                         | 77.2 ± 0.1              |

Data were obtained from Tables 3-6, pp. 34-37 and Appendix 5, Tables XVIII-XXXIII, pp. 99-114 of the study report.

<sup>1</sup> Concentration on soil (mg a.i./kg) was calculated stepwise as follows: [(mass of test substance adsorbed to soil and dissolved in pore water in the previous step) - (mass of test substance decanted in the current step)] / initial mass of soil. For example, for the B-1 IVb sandy loam soil sample at 35.0 mg a.i./kg soil, [(3.992 µg/g x 1 g) + (0.155 µg/mL x (7 mL - 5.7 mL)) - (0.077 mg/mL x 7 mL)] / 1 g = 3.652 mg/kg. Reported values are the mean concentration remaining on soil after four desorption steps.

<sup>2</sup> Concentration in solution (µg/mL) was calculated at each step as follows: mean radioactivity measured (dpm) x specific activity (µg/dpm) / LSC sample volume (mL). For example, for the B-1 IVb sandy loam soil sample at 35.0 mg a.i./kg soil, 2643 dpm x 2.92E-06 µg/dpm / 0.1 mL = 0.077 µg/mL. Reported values are the mean concentration in combined supernatants after four desorption steps.

<sup>3</sup> Percent desorbed was calculated at each step as follows: (mass of test substance decanted) x 100% / (mass of test substance adsorbed to soil and dissolved in pore water after the adsorption step). For example, for the B-1 IVb sandy loam soil sample at 35.0 mg a.i./kg soil, (0.077 µg/mL x 5.7 mL) x 100% / [(9.338 µg/g x 1 g) + (3.788 µg/mL x (7 mL - 5.7 mL))] = 3.09%. Therefore, percent desorbed values are not percent of the absorbed; they are percent of the test substance not decanted during the adsorption step. Reported values are the mean sum of percentages across all four desorption steps.

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**Table 8: Adsorption and desorption constants of [<sup>14</sup>C-U-phenyl]orthosulfamuron in the soils.**

| <b>Adsorption</b> |                      |                      |            |                      |                        |
|-------------------|----------------------|----------------------|------------|----------------------|------------------------|
| <b>Soil</b>       | <b>K<sub>d</sub></b> | <b>K<sub>f</sub></b> | <b>1/n</b> | <b>R<sup>2</sup></b> | <b>K<sub>foc</sub></b> |
| B-1 Sandy loam    | 6.01 ± 3.20          | 3.76                 | 0.751      | 0.976                | 283                    |
| G-2 Silt loam     | 8.62 ± 2.46          | 6.62                 | 0.856      | 0.993                | 326                    |
| M-2 Silt loam     | 6.26 ± 1.45          | 5.47                 | 0.920      | 0.990                | 547                    |
| VM-1 Clay loam    | 6.11 ± 0.63          | 5.72                 | 0.955      | 0.999                | 249                    |

| <b>Desorption</b> |                      |                      |            |                      |                        |
|-------------------|----------------------|----------------------|------------|----------------------|------------------------|
| <b>Soil</b>       | <b>K<sub>d</sub></b> | <b>K<sub>f</sub></b> | <b>1/n</b> | <b>R<sup>2</sup></b> | <b>K<sub>foc</sub></b> |
| B-1 Sandy loam    | 58.0 ± 17.6          | 35.8                 | 0.902      | 0.964                | 2690                   |
| G-2 Silt loam     | 42.8 ± 12.2          | 32.0                 | 0.935      | 0.978                | 1580                   |
| M-2 Silt loam     | 105 ± 35             | 141                  | 1.074      | 0.971                | 14100                  |
| VM-1 Clay loam    | 18.1 ± 3.0           | 20.3                 | 1.033      | 0.993                | 882                    |

Data were calculated from those of DER Tables 6 and 7.

K<sub>d</sub> – Soil-water partition coefficient (mean ± s.d., n=8) for four concentrations, two replicates each.

K<sub>f</sub> – Freundlich adsorption and desorption coefficients for four concentrations, two replicates each.

1/n – Freundlich exponent.

R<sup>2</sup> – Regression coefficient of Freundlich equation.

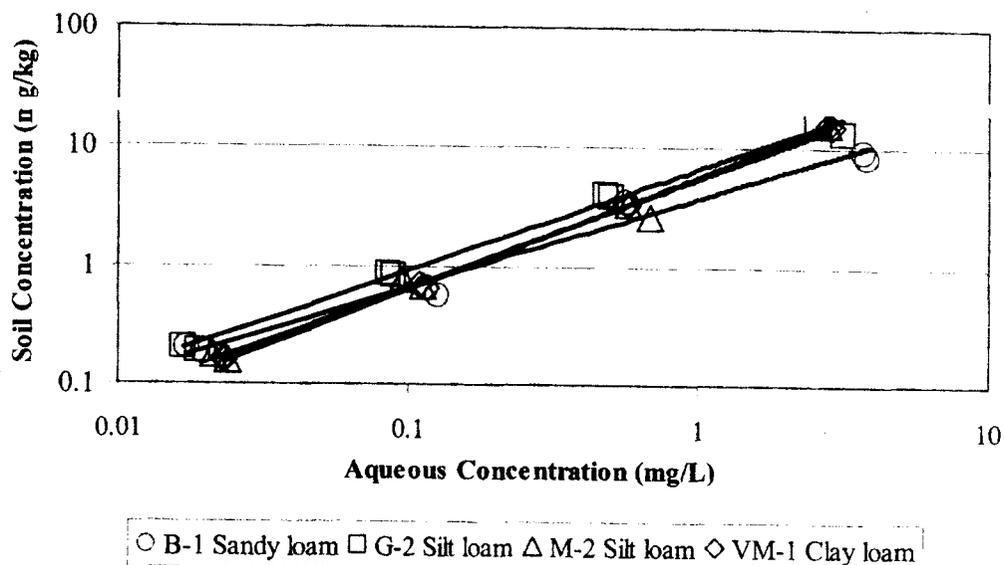
K<sub>foc</sub> – Organic carbon Freundlich partition coefficient.

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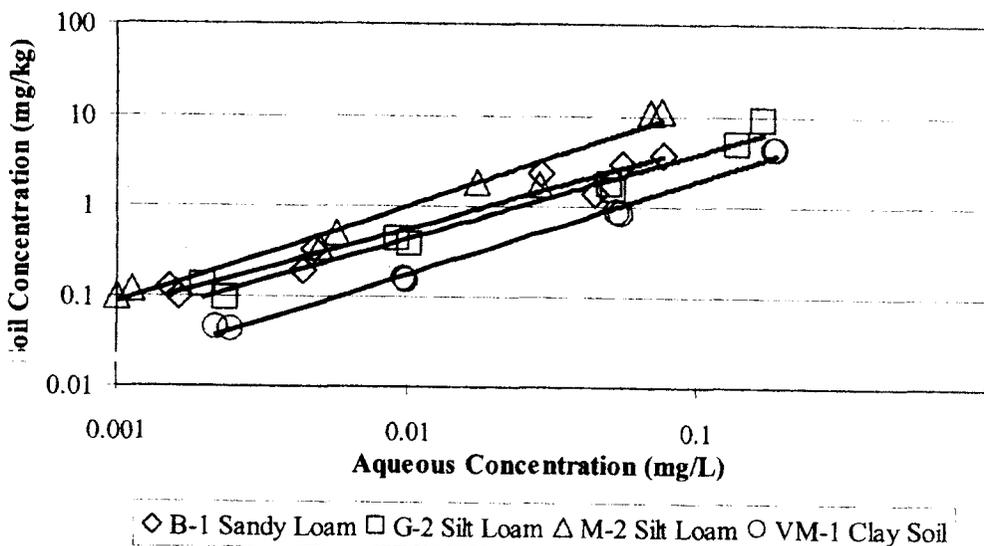
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**Figure 1. Freundlich Adsorption Isotherms for Orthosulfamuron in Four Soils with Two Replications.**



**Figure 2. Freundlich Desorption Isotherms for Orthosulfamuron in Four Soils with Two Replications, Four Desorption Periods.**



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### III. STUDY DEFICIENCIES:

1. Material balances were determined only for the highest test concentrations for all test soils, rather than for all test concentrations.
2. None of the test soils had an organic matter content of <1%.
3. Samples were analyzed for total radioactivity, but not for orthosulfamuron or its transformation products. Furthermore, detection limits for LSC analysis were not reported. LOD and LOQ should be reported to allow evaluation of the adequacy of the test method for the determination of the parent compound and any transformation products.
4. The supernatant volumes of the adsorption phase were not reported. They were assumed to be consistent with those of the desorption phase for calculation of desorption kinetics.
5. Supernatants were inadequately decanted, as 1.1-1.7 mL of solution remained with soil samples at each separation.
6. Equilibration periods were only two hours. Adequate time should be allowed for complete equilibration.
7. It could not be determined if the test soils were comparable to soils found at domestic intended use sites.
8. It was not stated whether the definitive study was conducted in the dark. Lighting conditions during the experiment should be reported.

### IV. REVIEWER'S COMMENTS:

1. Selected desorption statistics reported in Tables XVIII to XXXIII of the study report, such as amounts of test substance desorbed ( $W_d$ ) and percents desorbed, were incorrectly calculated and reported. Furthermore, desorption  $K_d$  values were not reported.
2. A preliminary study to justify the soil:solution ratio used in the definitive study was not conducted. The rationale for selection of the 1:7 (w:v) soil:solution ratio used in the definitive study was not provided.
3. It was not demonstrated that the polypropylene tubes used in the definitive study were the most suitable test vessel type available (p. 18). A preliminary study investigating adsorption of the test substance to different types of test vessels should have been conducted.
4. The physico-chemical properties of the test substance were incompletely reported.

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5. A complete description of the test soil collection and storage was not provided; pesticide use history at the collection site and collection procedures were not reported.
6. Control samples were not prepared for the adsorption or desorption tests.
7. The properties of the test soils were incomplete; bulk density and microbial biomass were not reported for any of the test soils.
8. Test sample storage conditions prior to analysis and storage stability data were not reported.
9. An experimental protocol was included in Appendix 1, pp. 52-63 of the study report.
10. The  $1/n$  values associated with the Freundlich  $K_{ads}$  values for the B-1 sandy loam and G-2 silt loam soils were  $<0.9$  ( $1/n = 0.751$  and  $0.856$ , respectively). If the  $1/n$  value is not within the range of  $0.9$  to  $1.1$ , then the Freundlich isotherm may not adequately or accurately represent the adsorption or desorption of the test compound across all concentrations.
11. The highest recommended label rate for a single application of the test substance was not reported. Subdivision N guidelines state that one concentration should be roughly equivalent to the maximum proposed or registered field application rate of the parent compound.
12.  $K_{ads}$  values were compared to soil characteristics through linear regression. The correlation coefficient ( $R^2$ ) value for the relationship of  $K_{ads}$  vs. % organic carbon is  $0.2836$ , for  $K_{ads}$  vs. pH is  $0.0012$ , and for  $K_{ads}$  vs. % clay is  $0.3483$  (DER Attachment 2). These  $R^2$  values are lower than those of a concurrently submitted study (MRID 46578971), possibly due to higher sample variability and/or lower study precision.

### V. REFERENCES:

1. U.S. Environmental Protection Agency. 1982. Pesticide Assessment Guidelines, Subdivision N, Chemistry: Environmental Fate, Section 163-1. Mobility studies. Office of Pesticide and Toxic Substances, Washington, DC. EPA 540/9-82-021.
2. U.S. Environmental Protection Agency. 1989. FIFRA Accelerated Reregistration, Phase 3 Technical Guidance. Office of the Prevention, Pesticides, and Toxic Substances, Washington, DC. EPA 540/09-90-078.
3. U.S. Environmental Protection Agency. 1993. Pesticide Registration Rejection Rate Analysis - Environmental Fate. Office of the Prevention, Pesticides, and Toxic Substances, Washington, DC. EPA 738.
4. U.S. Environmental Protection Agency. 2003. Guidance for Calculating Sorption Coefficients in Batch Equilibrium Studies.

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**Attachment 1: Structures of Parent and Transformation Products**

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**Orthosulfamuron [IR5878; S3]**

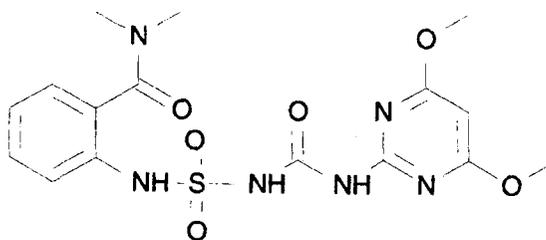
**IUPAC name:** 1-(4,6-Dimethoxypyrimidin-2-yl)-3-[2-(dimethylcarbamoyl)phenylsulfamoyl]urea.

**CAS name:** 2-[[[[[4,6-Dimethoxy-2-pyrimidinyl]amino]carbonyl]amino]sulfonyl]amino]-N,N-dimethylbenzamide.

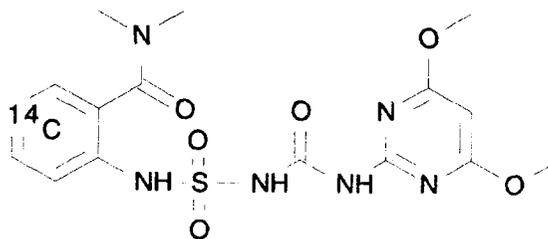
**CAS No:** 213464-77-8.

**SMILES String:** CN(C(=O)c1ccccc1NS(=O)(=O)NC(=O)Nc1nc(cc(n1)OC)OC)C.

**Unlabeled**



**[Phenyl-U-<sup>14</sup>C]IR5878**



<sup>14</sup>C = Location of the radiolabel.

**Identified Compounds**

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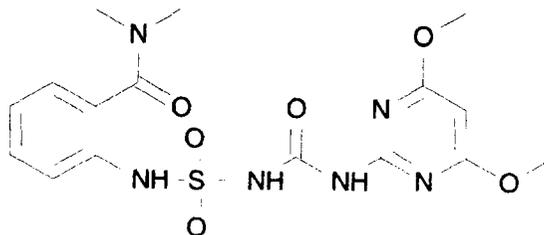
**Orthosulfamuron [IR5878; S3]**

**IUPAC name:** 1-(4,6-Dimethoxypyrimidin-2-yl)-3-[2-(dimethylcarbamoyl)phenylsulfamoyl]urea.

**CAS name:** 2-[[[(4,6-Dimethoxy-2-pyrimidinyl)amino]carbonyl]amino]sulfonyl]amino]-N,N-dimethylbenzamide.

**CAS No:** 213464-77-8.

**SMILES String:** CN(C(=O)c1ccccc1NS(=O)(=O)NC(=O)Nc1nc(cc(n1)OC)OC)C.



**Attachment 2: Excel Spreadsheets**

**Chemical:** Orthosulfamuron (IR5878)  
**PC Code:** 108209  
**MRID:** 46219074  
**Guideline No:** 163-1

**Table 5: Adsorption supernatants (% of applied)**

|       | B-1 Sandy loam | G-2 Silt loam | M-2 Silt loam | VM-1 Clay loam |
|-------|----------------|---------------|---------------|----------------|
| 35    | 76.07          | 62.52         | 55.96         | 55.18          |
| 35    | 73.9           | 51.02         | 55.9          | 56.84          |
| AVG   | 74.99          | 56.77         | 55.93         | 56.01          |
| STDEV | 1.53           | 8.13          | 0.04          | 1.17           |

**Table 5: High-dose Desorption supernatants (% of applied)**

|       | B-1 Sandy loam | G-2 Silt loam | M-2 Silt loam | VM-1 Clay loam |
|-------|----------------|---------------|---------------|----------------|
| 35    | 15.69          | 23.37         | 13.16         | 32.30          |
| 35    | 15.61          | 23.00         | 12.15         | 30.71          |
| AVG   | 15.65          | 23.19         | 12.66         | 31.51          |
| STDEV | 0.06           | 0.26          | 0.71          | 1.12           |

Data were obtained from Table 8, p. 39 of the study report.

**Table 5: Extracted (% of applied)**

|       | B-1 Sandy loam | G-2 Silt loam | M-2 Silt loam | VM-1 Clay loam |
|-------|----------------|---------------|---------------|----------------|
| 35    | 1.97           | 5.88          | 5.71          | 5.67           |
| 35    | 2.4            | 11.62         | 5.24          | 5.01           |
| AVG   | 2.19           | 8.75          | 5.48          | 5.34           |
| STDEV | 0.30           | 4.06          | 0.33          | 0.47           |

Data were obtained from Appendix 5, Table XXXIV, p. 115 of the study report.

**Table 5: Combusted (% of applied)**

|       | B-1 Sandy loam | G-2 Silt loam | M-2 Silt loam | VM-1 Clay loam |
|-------|----------------|---------------|---------------|----------------|
| 35    | 2.28           | 3.44          | 18.21         | 2.7            |
| 35    | 3.18           | 10.21         | 19.68         | 3.78           |
| AVG   | 2.73           | 6.83          | 18.95         | 3.24           |
| STDEV | 0.64           | 4.79          | 1.04          | 0.76           |

Data were obtained from Appendix 5, Table XXXVb, p. 116 of the study report.

**Table 5: Recovery (% of applied)**

|       | B-1 Sandy loam | G-2 Silt loam | M-2 Silt loam | VM-1 Clay loam |
|-------|----------------|---------------|---------------|----------------|
| 35    | 96.01          | 95.21         | 93.04         | 95.85          |
| 35    | 95.09          | 95.85         | 92.97         | 96.34          |
| AVG   | 95.55          | 95.53         | 93.01         | 96.10          |
| STDEV | 0.65           | 0.45          | 0.05          | 0.35           |

Chemical: Orthosulfamuron (IR5878)  
 PC Code: 108209  
 MRID: 46219074  
 Guideline No: 163-1

Adsorption: B-1 Soil

| Parameter           | Value     |
|---------------------|-----------|
| Spec. Act. (ug/dpm) | 2.924E-06 |
| A,B LSC vol. (mL)   | 0.1       |
| C,D LSC vol. (mL)   | 0.5       |
| Vo (mL)             | 7         |
| Msoil (g)           | 1         |

| Concen. | ug applied |
|---------|------------|
| A       | 35.783     |
| B       | 7.463      |
| C       | 1.446      |
| D       | 0.321      |

| Soil | %OC  |
|------|------|
| B-1  | 1.33 |
| G-2  | 2.03 |
| M-2  | 1.00 |
| VM-1 | 2.30 |

| Sample | Mean dpm | Caq (ug/mL) | Cs (ug/g) | % of applied  | Kd          | Koc        |
|--------|----------|-------------|-----------|---------------|-------------|------------|
| Aa     | 132988   | 3.889       | 8.563     | 23.93%        | 2.20        | 166        |
| Ab     | 129201   | 3.778       | 9.338     | 26.10%        | 2.47        | 186        |
| Ba     | 19466    | 0.569       | 3.479     | 46.61%        | 6.11        | 460        |
| Bb     | 19398    | 0.567       | 3.493     | 46.80%        | 6.16        | 463        |
| Ca     | 21359    | 0.125       | 0.572     | 39.53%        | 4.58        | 344        |
| Cb     | 19614    | 0.115       | 0.643     | 44.47%        | 5.61        | 422        |
| Da     | 2949     | 0.017       | 0.200     | 62.39%        | 11.61       | 873        |
| Db     | 3363     | 0.020       | 0.183     | 57.11%        | 9.32        | 701        |
|        | Mean     |             |           | <b>43.37%</b> | <b>6.01</b> | <b>452</b> |
|        | s.d.     |             |           | 13.44%        | 3.20        | 241        |

Data (mean dpm) were obtained from Appendix 5, Table XIV, p. 95.

Adsorption: G-2 Soil

| Sample | Mean dpm | Caq (ug/mL) | Cs (ug/g) | % of applied  | Kd          | Koc        |
|--------|----------|-------------|-----------|---------------|-------------|------------|
| Aa     | 109306   | 3.196       | 13.410    | 37.48%        | 4.20        | 207        |
| Ab     | 89194    | 2.608       | 17.527    | 48.98%        | 6.72        | 331        |
| Ba     | 17393    | 0.509       | 3.903     | 52.30%        | 7.67        | 378        |
| Bb     | 16486    | 0.482       | 4.089     | 54.79%        | 8.48        | 418        |
| Ca     | 14457    | 0.085       | 0.854     | 59.07%        | 10.10       | 498        |
| Cb     | 15038    | 0.088       | 0.830     | 57.43%        | 9.44        | 465        |
| Da     | 3210     | 0.019       | 0.190     | 59.06%        | 10.10       | 498        |
| Db     | 2850     | 0.017       | 0.204     | 63.65%        | 12.26       | 604        |
|        | Mean     |             |           | <b>54.10%</b> | <b>8.62</b> | <b>425</b> |
|        | s.d.     |             |           | 8.09%         | 2.46        | 121        |

Data (mean dpm) were obtained from Appendix 5, Table XV, p. 96.

Table 6: Mean & s.d.

| Caq (ug/mL) | Cs (ug/g) | % of applied |
|-------------|-----------|--------------|
| 3.833       | 8.951     | 25.0% Mean   |
| 0.078       | 0.548     | 1.5% s.d.    |
| 0.568       | 3.486     | 46.7% Mean   |
| 0.001       | 0.010     | 0.1% s.d.    |
| 0.120       | 0.607     | 42.0% Mean   |
| 0.007       | 0.051     | 3.5% s.d.    |
| 0.018       | 0.192     | 59.8% Mean   |
| 0.002       | 0.012     | 3.7% s.d.    |

Table 6: Mean & s.d.

| Caq (ug/mL) | Cs (ug/g) | % of applied |
|-------------|-----------|--------------|
| 2.902       | 15.47     | 43.2% Mean   |
| 0.416       | 2.91      | 8.1% s.d.    |
| 0.495       | 4.00      | 53.5% Mean   |
| 0.019       | 0.13      | 1.8% s.d.    |
| 0.086       | 0.84      | 58.3% Mean   |
| 0.002       | 0.02      | 1.2% s.d.    |
| 0.018       | 0.20      | 61.4% Mean   |
| 0.001       | 0.01      | 3.2% s.d.    |

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Adsorption: M-2 Soil

| Sample | Mean dpm | Caq (ug/mL) | Cs (ug/g) | % of applied | Kd   | Koc |
|--------|----------|-------------|-----------|--------------|------|-----|
| Aa     | 97830    | 2.861       | 15.759    | 44.04%       | 5.51 | 551 |
| Ab     | 97285    | 2.845       | 15.871    | 44.35%       | 5.58 | 558 |
| Ba     | 23460    | 0.686       | 2.661     | 35.66%       | 3.88 | 388 |
| Bb     | 19626    | 0.574       | 3.446     | 46.17%       | 6.00 | 600 |
| Ca     | 16233    | 0.095       | 0.781     | 54.04%       | 8.23 | 823 |
| Cb     | 19008    | 0.111       | 0.668     | 46.19%       | 6.01 | 601 |
| Da     | 3601     | 0.021       | 0.174     | 54.08%       | 8.24 | 824 |
| Db     | 4026     | 0.024       | 0.156     | 48.66%       | 6.63 | 663 |
|        |          | Mean        |           | 46.65%       | 6.26 | 626 |
|        |          | s.d.        |           | 5.94%        | 1.45 | 145 |

Data (mean dpm) were obtained from Appendix 5, Table XVI, p. 97.

Adsorption: VM-1 Soil

| Sample | Mean dpm | Caq (ug/mL) | Cs (ug/g) | % of applied | Kd   | Koc |
|--------|----------|-------------|-----------|--------------|------|-----|
| Aa     | 96474    | 2.821       | 16.037    | 44.82%       | 5.68 | 247 |
| Ab     | 99377    | 2.906       | 15.443    | 43.16%       | 5.31 | 231 |
| Ba     | 19700    | 0.576       | 3.431     | 45.97%       | 5.96 | 259 |
| Bb     | 19690    | 0.576       | 3.433     | 46.00%       | 5.96 | 259 |
| Ca     | 18477    | 0.108       | 0.690     | 47.69%       | 6.38 | 277 |
| Cb     | 19653    | 0.115       | 0.641     | 44.36%       | 5.58 | 243 |
| Da     | 3910     | 0.023       | 0.161     | 50.14%       | 7.04 | 306 |
| Db     | 3942     | 0.023       | 0.160     | 49.73%       | 6.92 | 301 |
|        |          | Mean        |           | 46.48%       | 6.11 | 265 |
|        |          | s.d.        |           | 2.51%        | 0.63 | 27  |

Data (mean dpm) were obtained from Appendix 5, Table XVII, p. 98.

**Table 6:**

| Mean & s.d. |           |              |
|-------------|-----------|--------------|
| Caq (ug/mL) | Cs (ug/g) | % of applied |
| 2.853       | 15.81     | 44.2%        |
| 0.011       | 0.08      | 0.2%         |
| 0.630       | 3.05      | 40.9%        |
| 0.079       | 0.55      | 7.4%         |
| 0.103       | 0.72      | 50.1%        |
| 0.011       | 0.08      | 5.6%         |
| 0.022       | 0.16      | 51.4%        |
| 0.002       | 0.01      | 3.8%         |
|             |           | Mean         |
|             |           | s.d.         |

**Table 6:**

| Mean & s.d. |           |              |
|-------------|-----------|--------------|
| Caq (ug/mL) | Cs (ug/g) | % of applied |
| 2.863       | 15.74     | 44.0%        |
| 0.060       | 0.42      | 1.2%         |
| 0.576       | 3.43      | 46.0%        |
| 0.000       | 0.00      | 0.0%         |
| 0.111       | 0.67      | 46.0%        |
| 0.005       | 0.03      | 2.4%         |
| 0.023       | 0.16      | 49.9%        |
| 0.000       | 0.00      | 0.3%         |
|             |           | Mean         |
|             |           | s.d.         |

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Table 8: Adsorption Kf

|                | Kf ads | 1/n   | r <sup>2</sup> | Kfoc |
|----------------|--------|-------|----------------|------|
| B-1 Sandy loam | 3.76   | 0.751 | 0.9759         | 283  |
| G-2 Silt loam  | 6.62   | 0.856 | 0.9927         | 326  |
| VM-1 Clay loam | 5.72   | 0.955 | 0.9992         | 249  |
| s.d.           | 1.20   |       |                | 134  |
| Mean           | 5.39   |       |                | 351  |
| CV             | 22%    |       |                | 38%  |

Table 8: Desorption Kf

|                | Kf des | 1/n   | r <sup>2</sup> | Kfoc  |
|----------------|--------|-------|----------------|-------|
| B-1 Sandy loam | 35.77  | 0.902 | 0.9641         | 2690  |
| G-2 Silt loam  | 32.04  | 0.935 | 0.9783         | 1578  |
| M-2 Silt loam  | 140.58 | 1.074 | 0.9712         | 14058 |
| VM-1 Clay loam | 20.30  | 1.033 | 0.9932         | 882   |
| s.d.           | 57.17  |       |                | 4802  |
| Mean           | 57.17  |       |                | 4802  |
| CV             | 98%    |       |                | 129%  |

Data were calculated from the tables above using Figures 1 and 2.

Kd

| Kd   | Koc  |
|------|------|
| 6.01 | 452  |
| 8.62 | 425  |
| 0.40 | 0.20 |
| 6.11 | 265  |
| 1.25 | 148  |
| 6.75 | 442  |
| 19%  | 33%  |

s.d.  
 Mean  
 CV

Kd

| Kd     | Koc   |
|--------|-------|
| 58.03  | 4363  |
| 42.76  | 2106  |
| 104.78 | 10478 |
| 18.12  | 788   |
| 55.92  | 4434  |
| 65%    | 97%   |

s.d.  
 Mean  
 CV

Chemical: Orthosulfamuron (IR5878)  
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**Desorption: B-1 Soil, Solution A**

| Parameter           | Value     |
|---------------------|-----------|
| Spec. Act. (ug/dpm) | 2.924E-06 |
| LSC vol. (mL)       | 0.1       |
| Va (mL)             | 5.8       |
| Vb (mL)             | 5.7       |
| Misoil (g)          | 1         |

| Mass           | Value |
|----------------|-------|
| Ads a (ug)     | 8.563 |
| Ads b (ug)     | 9.338 |
| Non-ads a (ug) | 4.666 |
| Non-ads b (ug) | 4.911 |

Assuming Va for adsorption = Va for desorption.  
 Assuming Vb for adsorption = Vb for desorption.

| Sample   | Mean dpm | Caq (ug/mL) | Cs (ug/g) | Maq removed (ug) | % of adsorbed | Kd    | Koc  |
|----------|----------|-------------|-----------|------------------|---------------|-------|------|
| B-1 Ia   | 40562    | 1.186       | 4.927     | 6.879            | 52.00%        | 4.15  | 312  |
| B-1 Ib   | 41374    | 1.210       | 5.781     | 6.896            | 48.39%        | 4.78  | 359  |
| B-1 IIa  | 13234    | 0.387       | 3.642     | 2.244            | 16.97%        | 9.41  | 708  |
| B-1 IIb  | 13665    | 0.400       | 4.557     | 2.278            | 15.98%        | 11.40 | 857  |
| B-1 IIIa | 4907     | 0.143       | 3.102     | 0.832            | 6.29%         | 21.62 | 1625 |
| B-1 IIIb | 5298     | 0.155       | 3.992     | 0.883            | 6.20%         | 25.77 | 1937 |
| B-1 IVa  | 1908     | 0.056       | 2.883     | 0.324            | 2.45%         | 51.68 | 3886 |
| B-1 IVb  | 2643     | 0.077       | 3.652     | 0.441            | 3.09%         | 47.26 | 3553 |
| Sum a    |          |             | 10.279    |                  | 77.70%        | 22.01 | 1655 |
| Sum b    |          |             | 10.497    |                  | 73.66%        |       |      |

Data (mean dpm) were obtained from Appendix 5, Table XVIII, p. 99.

| Table 7: Mean & s.d. |           |              |             |
|----------------------|-----------|--------------|-------------|
| Caq (ug/mL)          | Cs (ug/g) | % of applied | Maq (ug)    |
| 1.198                | 5.354     | 50.2%        | 6.887 Mean  |
| 0.017                | 0.604     | 2.5%         | 0.012 s.d.  |
| 0.393                | 4.099     | 16.5%        | 2.261 Mean  |
| 0.009                | 0.647     | 0.7%         | 0.023 s.d.  |
| 0.149                | 3.547     | 6.2%         | 0.858 Mean  |
| 0.008                | 0.629     | 0.1%         | 0.036 s.d.  |
| 0.067                | 3.268     | 2.8%         | 0.382 Mean  |
| 0.015                | 0.544     | 0.5%         | 0.083 s.d.  |
| 0.452                |           | 75.7%        | 10.388 Mean |
| 0.007                |           | 2.9%         | 0.154 s.d.  |

**Desorption: B-1 Soil, Solution B**

| Parameter     | Value |
|---------------|-------|
| LSC vol. (mL) | 0.1   |
| Va (mL)       | 5.3   |
| Vb (mL)       | 5.6   |

| Mass           | Value |
|----------------|-------|
| Ads a (ug)     | 3.479 |
| Ads b (ug)     | 3.493 |
| Non-ads a (ug) | 0.968 |
| Non-ads b (ug) | 0.794 |

| Sample   | Mean dpm | Caq (ug/mL) | Cs (ug/g) | Maq removed (ug) | % of adsorbed | Kd    | Koc  |
|----------|----------|-------------|-----------|------------------|---------------|-------|------|
| B-1 Ia   | 10000    | 0.292       | 2.400     | 1.550            | 34.85%        | 8.21  | 617  |
| B-1 Ib   | 6076     | 0.178       | 3.043     | 0.995            | 23.21%        | 17.13 | 1288 |
| B-1 IIa  | 5053     | 0.148       | 1.862     | 0.783            | 17.61%        | 12.60 | 948  |
| B-1 IIb  | 3216     | 0.094       | 2.634     | 0.527            | 12.28%        | 28.01 | 2106 |
| B-1 IIIa | 2642     | 0.077       | 1.573     | 0.409            | 9.21%         | 20.36 | 1531 |
| B-1 IIIb | 1728     | 0.051       | 2.411     | 0.283            | 6.60%         | 47.73 | 3589 |
| B-1 IVa  | 1522     | 0.045       | 1.393     | 0.236            | 5.30%         | 31.29 | 2353 |
| B-1 IVb  | 997      | 0.029       | 2.278     | 0.163            | 3.81%         | 78.15 | 5876 |
| Sum a    |          |             | 2.978     |                  | 66.98%        | 30.43 | 2288 |
| Sum b    |          |             | 1.968     |                  | 45.90%        |       |      |

Data (mean dpm) were obtained from Appendix 5, Table XXII, p. 103.

| Table 7: Mean & s.d. |           |              |            |
|----------------------|-----------|--------------|------------|
| Caq (ug/mL)          | Cs (ug/g) | % of applied | Maq (ug)   |
| 0.235                | 2.721     | 29.0%        | 1.272 Mean |
| 0.081                | 0.455     | 8.2%         | 0.392 s.d. |
| 0.121                | 2.248     | 14.9%        | 0.655 Mean |
| 0.038                | 0.545     | 3.8%         | 0.181 s.d. |
| 0.064                | 1.992     | 7.9%         | 0.346 Mean |
| 0.019                | 0.593     | 1.8%         | 0.089 s.d. |
| 0.037                | 1.835     | 4.6%         | 0.200 Mean |
| 0.011                | 0.626     | 1.1%         | 0.051 s.d. |
| 0.113                |           | 56.4%        | 2.473 Mean |
| 0.033                |           | 14.9%        | 0.714 s.d. |

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Desorption: B-1 Soil, Solution C

| Parameter     | Value |
|---------------|-------|
| LSC vol. (mL) | 0.5   |
| Va (mL)       | 5.9   |
| Vb (mL)       | 5.7   |

| Mass           | Value |
|----------------|-------|
| Ads a (ug)     | 0.572 |
| Ads b (ug)     | 0.643 |
| Non-ads a (ug) | 0.137 |
| Non-ads b (ug) | 0.149 |

| Sample   | Mean dpm | Caq (ug/mL) | Cs (ug/g) | Maq removed (ug) | % of adsorbed | Kd    | Koc  | Mean & s.d. |           |              |          |       |      |
|----------|----------|-------------|-----------|------------------|---------------|-------|------|-------------|-----------|--------------|----------|-------|------|
|          |          |             |           |                  |               |       |      | Caq (ug/mL) | Cs (ug/g) | % of applied | Maq (ug) |       |      |
| B-1 Ia   | 8740     | 0.051       | 0.351     | 0.302            | 42.53%        | 6.87  | 517  | 0.049       | 0.408     | 38.1%        | 0.284    | Mean  |      |
| B-1 Ib   | 8002     | 0.047       | 0.465     | 0.267            | 33.67%        | 9.93  | 747  | 0.003       | 0.080     | 6.3%         | 0.025    | s.d.  |      |
| B-1 IIa  | 3947     | 0.023       | 0.246     | 0.136            | 19.21%        | 10.65 | 801  | 0.022       | 0.312     | 17.2%        | 0.128    | Mean  |      |
| B-1 IIb  | 3619     | 0.021       | 0.377     | 0.121            | 15.23%        | 17.83 | 1340 | 0.001       | 0.093     | 2.8%         | 0.011    | s.d.  |      |
| B-1 IIIa | 1545     | 0.009       | 0.208     | 0.053            | 7.52%         | 23.03 | 1731 | 0.009       | 0.276     | 6.9%         | 0.052    | Mean  |      |
| B-1 IIb  | 1497     | 0.009       | 0.344     | 0.050            | 6.30%         | 39.24 | 2951 | 0.000       | 0.096     | 0.9%         | 0.002    | s.d.  |      |
| B-1 IVa  | 736      | 0.004       | 0.188     | 0.025            | 3.58%         | 43.65 | 3282 | 0.004       | 0.255     | 3.5%         | 0.026    | Mean  |      |
| B-1 IVb  | 798      | 0.005       | 0.322     | 0.027            | 3.36%         | 69.05 | 5192 | 0.000       | 0.095     | 0.2%         | 0.001    | s.d.  |      |
|          |          | Sum a       |           | 0.516            | 72.84%        | 27.53 | 2070 | 0.021       |           | 65.7%        |          | 0.490 | Mean |
|          |          | Sum b       |           | 0.464            | 58.56%        |       |      | 0.002       |           | 10.1%        |          | 0.037 | s.d. |

Data (mean dpm) were obtained from Appendix 5, Table XXVI, p. 107.

Desorption: B-1 Soil, Solution D

| Parameter     | Value |
|---------------|-------|
| LSC vol. (mL) | 0.5   |
| Va (mL)       | 5.7   |
| Vb (mL)       | 5.8   |

| Mass           | Value |
|----------------|-------|
| Ads a (ug)     | 0.200 |
| Ads b (ug)     | 0.183 |
| Non-ads a (ug) | 0.022 |
| Non-ads b (ug) | 0.024 |

| Sample   | Mean dpm | Caq (ug/mL)  | Cs (ug/g) | Maq removed (ug) | % of adsorbed | Kd    | Koc  | Mean & s.d. |           |              |          |       |      |
|----------|----------|--------------|-----------|------------------|---------------|-------|------|-------------|-----------|--------------|----------|-------|------|
|          |          |              |           |                  |               |       |      | Caq (ug/mL) | Cs (ug/g) | % of applied | Maq (ug) |       |      |
| B-1 Ia   | 1428     | 0.008        | 0.164     | 0.048            | 21.37%        | 19.67 | 1479 | 0.010       | 0.148     | 25.9%        | 0.055    | Mean  |      |
| B-1 Ib   | 1852     | 0.011        | 0.131     | 0.063            | 30.36%        | 12.11 | 910  | 0.002       | 0.023     | 6.4%         | 0.011    | s.d.  |      |
| B-1 IIa  | 802      | 0.005        | 0.142     | 0.027            | 12.00%        | 30.33 | 2281 | 0.004       | 0.129     | 11.8%        | 0.025    | Mean  |      |
| B-1 IIb  | 704      | 0.004        | 0.115     | 0.024            | 11.54%        | 28.01 | 2106 | 0.000       | 0.019     | 0.3%         | 0.002    | s.d.  |      |
| B-1 IIIa | 437      | 0.003        | 0.130     | 0.015            | 6.54%         | 51.06 | 3839 | 0.002       | 0.120     | 5.5%         | 0.012    | Mean  |      |
| B-1 IIb  | 274      | 0.002        | 0.109     | 0.009            | 4.49%         | 68.04 | 5116 | 0.001       | 0.015     | 1.4%         | 0.004    | s.d.  |      |
| B-1 IVa  | 258      | 0.002        | 0.123     | 0.009            | 3.88%         | 81.68 | 6141 | 0.002       | 0.111     | 4.2%         | 0.009    | Mean  |      |
| B-1 IVb  | 277      | 0.002        | 0.100     | 0.009            | 4.54%         | 61.49 | 4623 | 0.000       | 0.017     | 0.5%         | 0.001    | s.d.  |      |
|          |          | Sum a        |           | 0.098            | 43.78%        | 44.05 | 3312 | 0.004       |           | 47.4%        |          | 0.101 | Mean |
|          |          | Sum b        |           | 0.105            | 50.93%        |       |      | 0.000       |           | 5.1%         |          | 0.006 | s.d. |
|          |          | Overall mean |           |                  |               | 31.01 | 2331 |             |           | 61.29%       |          |       |      |
|          |          | Overall s.d. |           |                  |               | 22.62 | 1701 |             |           | 13.34%       |          |       |      |
|          |          | Phase 4 mean |           |                  |               | 58.03 | 4363 |             |           |              |          |       |      |
|          |          | Phase 4 s.d. |           |                  |               | 17.83 | 1326 |             |           |              |          |       |      |

Data (mean dpm) were obtained from Appendix 5, Table XXX, p. 111.

Chemical: Orthosulfamuron (IR5878)  
 PC Code: 108209  
 MRID: 46219074  
 Guideline No: 163-1

Description: G-2 Soil, Solution A

| Parameter           | Value     |
|---------------------|-----------|
| Spec. Act. (ug/dpm) | 2.924E-06 |
| LSC vol. (mL)       | 0.1       |
| Va (mL)             | 5.7       |
| Vb (mL)             | 5.7       |
| Msoil (g)           | 1         |

| Mass           | Value  |
|----------------|--------|
| Ads a (ug)     | 13.410 |
| Ads b (ug)     | 17.527 |
| Non-ads a (ug) | 4.155  |
| Non-ads b (ug) | 3.390  |

| Sample   | Mean dpm | Caq (ug/mL) | Cs (ug/g) | Maq removed (ug) | % of adsorbed | Kd    | Koc  |
|----------|----------|-------------|-----------|------------------|---------------|-------|------|
| G-2 Ia   | 43881    | 1.283       | 8.584     | 7.314            | 41.64%        | 6.69  | 330  |
| G-2 Ib   | 37669    | 1.101       | 13.207    | 6.278            | 30.01%        | 11.99 | 591  |
| G-2 IIa  | 17890    | 0.523       | 6.590     | 2.982            | 16.97%        | 12.60 | 621  |
| G-2 IIb  | 17301    | 0.506       | 11.098    | 2.884            | 13.79%        | 21.94 | 1081 |
| G-2 IIIa | 8581     | 0.251       | 5.514     | 1.430            | 8.14%         | 21.97 | 1082 |
| G-2 IIIb | 8880     | 0.260       | 9.938     | 1.480            | 7.08%         | 38.27 | 1895 |
| G-2 IVa  | 4757     | 0.139       | 4.866     | 0.793            | 4.51%         | 34.98 | 1723 |
| G-2 IVb  | 5867     | 0.172       | 9.075     | 0.978            | 4.67%         | 52.90 | 2606 |
| Sum a    |          |             | 12.518    |                  | 71.27%        | 25.17 | 1240 |
| Sum b    |          |             | 11.620    |                  | 55.55%        |       |      |

Data (mean dpm) were obtained from Appendix 5, Table XIX, p. 100.

Description: G-2 Soil, Solution B

| Parameter     | Value |
|---------------|-------|
| LSC vol. (mL) | 0.1   |
| Va (mL)       | 5.8   |
| Vb (mL)       | 5.8   |

| Mass           | Value |
|----------------|-------|
| Ads a (ug)     | 3.903 |
| Ads b (ug)     | 4.089 |
| Non-ads a (ug) | 0.610 |
| Non-ads b (ug) | 0.578 |

| Sample   | Mean dpm | Caq (ug/mL) | Cs (ug/g) | Maq removed (ug) | % of adsorbed | Kd    | Koc  |
|----------|----------|-------------|-----------|------------------|---------------|-------|------|
| G-2 Ia   | 8388     | 0.245       | 2.796     | 1.423            | 31.52%        | 11.40 | 562  |
| G-2 Ib   | 8067     | 0.236       | 3.016     | 1.368            | 29.31%        | 12.79 | 630  |
| G-2 IIa  | 4525     | 0.132       | 2.165     | 0.767            | 17.00%        | 16.36 | 806  |
| G-2 IIb  | 4500     | 0.132       | 2.378     | 0.763            | 16.35%        | 18.07 | 890  |
| G-2 IIIa | 2767     | 0.081       | 1.757     | 0.469            | 10.40%        | 21.72 | 1070 |
| G-2 IIIb | 2628     | 0.077       | 1.998     | 0.446            | 9.55%         | 26.00 | 1281 |
| G-2 IVa  | 1765     | 0.052       | 1.493     | 0.299            | 6.63%         | 28.93 | 1425 |
| G-2 IVb  | 1730     | 0.051       | 1.736     | 0.293            | 6.29%         | 34.32 | 1691 |
| Sum a    |          |             | 2.959     |                  | 65.55%        | 21.20 | 1044 |
| Sum b    |          |             | 2.870     |                  | 61.50%        |       |      |

Data (mean dpm) were obtained from Appendix 5, Table XXIII, p. 104.

| Table 7: Mean & s.d. |           |              |             |
|----------------------|-----------|--------------|-------------|
| Caq (ug/mL)          | Cs (ug/g) | % of applied | Maq (ug)    |
| 1.192                | 10.895    | 35.8%        | 6.796 Mean  |
| 0.128                | 3.269     | 8.2%         | 0.732 s.d.  |
| 0.514                | 8.844     | 15.4%        | 2.933 Mean  |
| 0.012                | 3.188     | 2.3%         | 0.069 s.d.  |
| 0.255                | 7.726     | 7.6%         | 1.455 Mean  |
| 0.006                | 3.128     | 0.8%         | 0.035 s.d.  |
| 0.155                | 6.970     | 4.6%         | 0.885 Mean  |
| 0.023                | 2.976     | 0.1%         | 0.131 s.d.  |
| 0.529                |           | 63.4%        | 12.069 Mean |
| 0.028                |           | 11.1%        | 0.635 s.d.  |

| Table 7: Mean & s.d. |           |              |            |
|----------------------|-----------|--------------|------------|
| Caq (ug/mL)          | Cs (ug/g) | % of applied | Maq (ug)   |
| 0.241                | 2.906     | 30.4%        | 1.395 Mean |
| 0.007                | 0.155     | 1.6%         | 0.038 s.d. |
| 0.132                | 2.271     | 16.7%        | 0.765 Mean |
| 0.001                | 0.151     | 0.5%         | 0.003 s.d. |
| 0.079                | 1.877     | 10.0%        | 0.457 Mean |
| 0.003                | 0.170     | 0.6%         | 0.017 s.d. |
| 0.051                | 1.614     | 6.5%         | 0.296 Mean |
| 0.001                | 0.172     | 0.2%         | 0.004 s.d. |
| 0.126                |           | 63.5%        | 2.914 Mean |
| 0.003                |           | 2.9%         | 0.062 s.d. |

Chemical: Orthosulfamuron (IR5878)  
 PC Code: 108209  
 MRID: 46219074  
 Guideline No: 163-1

Desorption: G-2 Soil, Solution C

| Parameter     | Value |
|---------------|-------|
| LSC vol. (mL) | 0.5   |
| Va (mL)       | 5.8   |
| Vb (mL)       | 5.6   |

| Mass           | Value |
|----------------|-------|
| Ads a (ug)     | 0.854 |
| Ads b (ug)     | 0.830 |
| Non-ads a (ug) | 0.101 |
| Non-ads b (ug) | 0.123 |

**Table 7: Mean & s.d.**

| Sample   | Mean dpm | Caq (ug/mL) | Cs (ug/g) | % of adsorbed | Kd     | Maq removed (ug) | % of adsorbed | Kd     | Maq removed (ug) | Cs (ug/g) | % of applied | Maq (ug) | Mean  |
|----------|----------|-------------|-----------|---------------|--------|------------------|---------------|--------|------------------|-----------|--------------|----------|-------|
| G-2 Ia   | 7529     | 0.044       | 0.647     | 0.255         | 26.72% | 14.70            | 0.255         | 26.72% | 724              | 0.044     | 0.648        | 26.2%    | 0.250 |
| G-2 Ib   | 7472     | 0.044       | 0.648     | 0.245         | 25.66% | 14.82            | 0.245         | 25.66% | 730              | 0.000     | 0.000        | 0.7%     | 0.008 |
| G-2 IIa  | 4793     | 0.028       | 0.504     | 0.163         | 17.01% | 17.98            | 0.163         | 17.01% | 886              | 0.027     | 0.517        | 16.0%    | 0.153 |
| G-2 IIb  | 4366     | 0.026       | 0.530     | 0.143         | 15.00% | 20.76            | 0.143         | 15.00% | 1023             | 0.002     | 0.018        | 1.4%     | 0.014 |
| G-2 IIIa | 2647     | 0.015       | 0.429     | 0.090         | 9.39%  | 27.74            | 0.090         | 9.39%  | 1366             | 0.015     | 0.448        | 8.8%     | 0.084 |
| G-2 IIb  | 2405     | 0.014       | 0.467     | 0.079         | 8.26%  | 33.23            | 0.079         | 8.26%  | 1637             | 0.001     | 0.027        | 0.8%     | 0.008 |
| G-2 IVa  | 1732     | 0.010       | 0.377     | 0.059         | 6.15%  | 37.22            | 0.059         | 6.15%  | 1834             | 0.010     | 0.400        | 5.7%     | 0.055 |
| G-2 IVb  | 1548     | 0.009       | 0.424     | 0.051         | 5.32%  | 46.81            | 0.051         | 5.32%  | 2306             | 0.001     | 0.033        | 0.6%     | 0.006 |
| Sum a    |          |             |           | 0.566         | 59.28% | 26.66            | 0.566         | 59.28% | 1313             | 0.024     |              | 56.8%    | 0.542 |
| Sum b    |          |             |           | 0.517         | 54.23% |                  | 0.517         | 54.23% |                  | 0.002     |              | 3.6%     | 0.035 |

Data (mean dpm) were obtained from Appendix 5, Table XXVII, p. 108.

Desorption: G-2 Soil, Solution D

| Parameter     | Value |
|---------------|-------|
| LSC vol. (mL) | 0.5   |
| Va (mL)       | 5.7   |
| Vb (mL)       | 5.7   |

| Mass           | Value |
|----------------|-------|
| Ads a (ug)     | 0.190 |
| Ads b (ug)     | 0.204 |
| Non-ads a (ug) | 0.024 |
| Non-ads b (ug) | 0.022 |

**Table 7: Mean & s.d.**

| Sample   | Mean dpm | Caq (ug/mL) | Cs (ug/g) | % of adsorbed | Kd     | Maq removed (ug) | % of adsorbed | Kd     | Maq removed (ug) | Cs (ug/g) | % of applied | Maq (ug) | Mean  |
|----------|----------|-------------|-----------|---------------|--------|------------------|---------------|--------|------------------|-----------|--------------|----------|-------|
| G-2 Ia   | 1604     | 0.009       | 0.148     | 0.053         | 24.98% | 15.81            | 0.053         | 24.98% | 779              | 0.008     | 0.161        | 21.8%    | 0.048 |
| G-2 Ib   | 1258     | 0.007       | 0.175     | 0.042         | 18.55% | 23.72            | 0.042         | 18.55% | 1168             | 0.001     | 0.019        | 4.5%     | 0.008 |
| G-2 IIa  | 925      | 0.005       | 0.123     | 0.031         | 14.41% | 22.68            | 0.031         | 14.41% | 1117             | 0.005     | 0.138        | 12.7%    | 0.028 |
| G-2 IIb  | 746      | 0.004       | 0.154     | 0.025         | 11.00% | 35.19            | 0.025         | 11.00% | 1734             | 0.001     | 0.022        | 2.4%     | 0.004 |
| G-2 IIIa | 550      | 0.003       | 0.107     | 0.018         | 8.57%  | 33.32            | 0.018         | 8.57%  | 1642             | 0.003     | 0.124        | 7.5%     | 0.017 |
| G-2 IIb  | 441      | 0.003       | 0.141     | 0.015         | 6.50%  | 54.73            | 0.015         | 6.50%  | 2696             | 0.000     | 0.024        | 1.5%     | 0.003 |
| G-2 IVa  | 400      | 0.002       | 0.095     | 0.013         | 6.23%  | 40.61            | 0.013         | 6.23%  | 2000             | 0.002     | 0.113        | 5.6%     | 0.012 |
| G-2 IVb  | 337      | 0.002       | 0.131     | 0.011         | 4.97%  | 66.32            | 0.011         | 4.97%  | 3267             | 0.000     | 0.025        | 0.9%     | 0.001 |
| Sum a    |          |             |           | 0.116         | 54.19% | 36.55            | 0.116         | 54.19% | 1800             | 0.005     |              | 47.6%    | 0.104 |
| Sum b    |          |             |           | 0.093         | 41.03% |                  | 0.093         | 41.03% |                  | 0.001     |              | 9.3%     | 0.016 |

Data (mean dpm) were obtained from Appendix 5, Table XXXI, p. 112.

|              |        |
|--------------|--------|
| Overall mean | 27.39  |
| Overall s.d. | 14.14  |
| Phase 4 mean | 42.76  |
| Phase 4 s.d. | 12.15  |
| Overall mean | 57.83% |
| Overall s.d. | 9.02%  |

Chemical: Orthosulfamuron (IR5878)  
 PC Code: 108209  
 MRID: 46219074  
 Guideline No: 163-1

Desorption: M-2 Soil, Solution A

| Parameter           | Value     |
|---------------------|-----------|
| Spec. Act. (ug/dpm) | 2.924E-06 |
| LSC vol. (mL)       | 0.1       |
| Va (mL)             | 5.6       |
| Vb (mL)             | 5.7       |
| Msoil (g)           | 1         |

| Mass           | Value  |
|----------------|--------|
| Ads a (ug)     | 15.759 |
| Ads b (ug)     | 15.871 |
| Non-ads a (ug) | 4.005  |
| Non-ads b (ug) | 3.698  |

| Sample   | Mean & s.d. |            |           |              |
|----------|-------------|------------|-----------|--------------|
|          | Mean dpm    | Cs (ug/mL) | Cs (ug/g) | % of applied |
| M-2 Ia   | 32661       | 0.955      | 13.079    | 27.06%       |
| M-2 Ib   | 29854       | 0.873      | 13.458    | 25.43%       |
| M-2 IIa  | 12704       | 0.371      | 11.816    | 10.53%       |
| M-2 IIb  | 11168       | 0.327      | 12.307    | 9.51%        |
| M-2 IIIa | 5479        | 0.160      | 11.214    | 4.54%        |
| M-2 IIIb | 4684        | 0.137      | 11.773    | 3.99%        |
| M-2 IVa  | 2362        | 0.069      | 10.955    | 1.96%        |
| M-2 IVb  | 2579        | 0.075      | 11.423    | 2.20%        |
| Sum a    |             | 8.712      | 70.58     | 44.08%       |
| Sum b    |             | 8.048      | 70.58     | 41.12%       |

Data (mean dpm) were obtained from Appendix 5, Table XX, p. 101.

Desorption: M-2 Soil, Solution B

| Parameter     | Value |
|---------------|-------|
| LSC vol. (mL) | 0.1   |
| Va (mL)       | 5.8   |
| Vb (mL)       | 5.7   |

| Mass           | Value |
|----------------|-------|
| Ads a (ug)     | 2.661 |
| Ads b (ug)     | 3.446 |
| Non-ads a (ug) | 0.823 |
| Non-ads b (ug) | 0.746 |

| Sample   | Mean & s.d. |            |           |               |
|----------|-------------|------------|-----------|---------------|
|          | Mean dpm    | Cs (ug/mL) | Cs (ug/g) | % of adsorbed |
| M-2 Ia   | 5490        | 0.161      | 2.361     | 26.72%        |
| M-2 Ib   | 8053        | 0.235      | 2.544     | 32.02%        |
| M-2 IIa  | 2366        | 0.069      | 2.069     | 11.52%        |
| M-2 IIb  | 3686        | 0.108      | 2.095     | 14.66%        |
| M-2 IIIa | 1046        | 0.031      | 1.938     | 5.09%         |
| M-2 IIIb | 1812        | 0.053      | 1.865     | 7.20%         |
| M-2 IVa  | 597         | 0.017      | 1.852     | 2.91%         |
| M-2 IVb  | 982         | 0.029      | 1.732     | 3.90%         |
| Sum a    |             | 1.611      | 42.48     | 46.23%        |
| Sum b    |             | 2.422      | 42.48     | 57.78%        |

Data (mean dpm) were obtained from Appendix 5, Table XXIV, p. 101.

Chemical: Orthosulfamuron (IR5878)  
 PC Code: 108209  
 MIRID: 46219074  
 Guideline No: 163-1

Desorption: M-2 Soil, Solution C

| Parameter     | Value |
|---------------|-------|
| LSC vol. (mL) | 0.5   |
| Va (mL)       | 5.5   |
| Vb (mL)       | 5.9   |

| Mass           | Value |
|----------------|-------|
| Ads a (ug)     | 0.781 |
| Ads b (ug)     | 0.668 |
| Non-ads a (ug) | 0.142 |
| Non-ads b (ug) | 0.122 |

| Sample   | Mean & s.d. |           |              |          |
|----------|-------------|-----------|--------------|----------|
|          | Caq (ug/mL) | Cs (ug/g) | % of applied | Maq (ug) |
| M-2 Ia   | 0.041       | 0.568     | 27.9%        | 0.236    |
| M-2 Ib   | 0.002       | 0.108     | 5.8%         | 0.023    |
| M-2 IIa  | 0.019       | 0.485     | 13.1%        | 0.111    |
| M-2 IIb  | 0.000       | 0.116     | 1.9%         | 0.004    |
| M-2 IIIa | 0.009       | 0.446     | 6.1%         | 0.052    |
| M-2 IIIb | 0.000       | 0.119     | 0.7%         | 0.000    |
| M-2 IVa  | 0.005       | 0.421     | 3.5%         | 0.030    |
| M-2 IVb  | 0.001       | 0.118     | 0.2%         | 0.001    |
| Sum a    | 0.019       | 0.429     | 50.5%        | Mean     |
| Sum b    | 0.001       | 0.026     | 8.6%         | s.d.     |

Data (mean dpm) were obtained from Appendix 5, Table XXVIII, p. 109.

Desorption: M-2 Soil, Solution D

| Parameter     | Value |
|---------------|-------|
| LSC vol. (mL) | 0.5   |
| Va (mL)       | 5.5   |
| Vb (mL)       | 5.7   |

| Mass           | Value |
|----------------|-------|
| Ads a (ug)     | 0.174 |
| Ads b (ug)     | 0.156 |
| Non-ads a (ug) | 0.032 |
| Non-ads b (ug) | 0.031 |

| Sample   | Mean & s.d. |           |              |          |
|----------|-------------|-----------|--------------|----------|
|          | Caq (ug/mL) | Cs (ug/g) | % of applied | Maq (ug) |
| M-2 Ia   | 0.009       | 0.135     | 25.1%        | 0.049    |
| M-2 Ib   | 0.000       | 0.016     | 3.4%         | 0.003    |
| M-2 IIa  | 0.004       | 0.119     | 11.3%        | 0.022    |
| M-2 IIb  | 0.000       | 0.016     | 0.7%         | 0.000    |
| M-2 IIIa | 0.002       | 0.113     | 5.0%         | 0.010    |
| M-2 IIIb | 0.000       | 0.016     | 0.2%         | 0.000    |
| M-2 IVa  | 0.001       | 0.108     | 3.0%         | 0.006    |
| M-2 IVb  | 0.000       | 0.015     | 0.0%         | 0.000    |
| Sum a    | 0.004       | 0.087     | 44.4%        | Mean     |
| Sum b    | 0.000       | 0.003     | 4.3%         | s.d.     |

Data (mean dpm) were obtained from Appendix 5, Table XXXII, p. 113.

| Overall mean | Value  |
|--------------|--------|
| Overall mean | 51.92  |
| Overall s.d. | 39.93  |
| Phase 4 mean | 104.78 |
| Phase 4 s.d. | 35.13  |

| Overall mean | Value  |
|--------------|--------|
| Overall mean | 47.38% |
| Overall s.d. | 6.43%  |

Chemical: Orthosulfamuron (IR5878)  
 PC Code: 108209  
 MRID: 46219074  
 Guideline No: 163-1

Desorption: VM-1 Soil, Solution A

| Parameter           | Value     |
|---------------------|-----------|
| Spec. Act. (ug/dpm) | 2.924E-06 |
| LSC vol. (mL)       | 0.1       |
| Va (mL)             | 5.7       |
| Vb (mL)             | 5.6       |
| Misoil (g)          | 1         |

| Mass           | Value  |
|----------------|--------|
| Ads a (ug)     | 16.037 |
| Ads b (ug)     | 15.443 |
| Non-ads a (ug) | 3.667  |
| Non-ads b (ug) | 4.068  |

| Sample    | Mean dpm | Ceq (ug/mL) | Cs (ug/g) | Mag removed (ug) | % of adsorbed | Kd    | Koc | Table 7: Mean & s.d. |           |              |          |
|-----------|----------|-------------|-----------|------------------|---------------|-------|-----|----------------------|-----------|--------------|----------|
|           |          |             |           |                  |               |       |     | Caq (ug/mL)          | Cs (ug/g) | % of applied | Maq (ug) |
| VM-1 Ia   | 47103    | 1.377       | 10.063    | 7.851            | 39.84%        | 7.31  | 318 | 1.401                | 9.799     | 40.4%        | 7.916    |
| VM-1 Ib   | 48740    | 1.425       | 9.535     | 7.981            | 40.91%        | 6.69  | 291 | 0.034                | 0.374     | 0.8%         | 0.092    |
| VM-1 IIa  | 24385    | 0.713       | 6.862     | 4.064            | 20.63%        | 9.62  | 418 | 0.706                | 6.748     | 20.3%        | 3.990    |
| VM-1 IIb  | 23915    | 0.699       | 6.635     | 3.916            | 20.07%        | 9.49  | 413 | 0.010                | 0.161     | 0.4%         | 0.105    |
| VM-1 IIIa | 13348    | 0.390       | 5.057     | 2.225            | 11.29%        | 12.96 | 563 | 0.384                | 5.014     | 11.1%        | 2.170    |
| VM-1 IIIb | 12915    | 0.378       | 4.970     | 2.115            | 10.84%        | 13.16 | 572 | 0.089                | 0.061     | 0.3%         | 0.078    |
| VM-1 IVa  | 6517     | 0.191       | 4.231     | 1.086            | 5.51%         | 22.20 | 965 | 0.109                | 4.211     | 5.4%         | 1.066    |
| VM-1 IVb  | 6388     | 0.187       | 4.192     | 1.046            | 5.36%         | 22.44 | 976 | 0.003                | 0.028     | 0.1%         | 0.028    |
| Sum a     |          |             | 15.226    | 77.27%           | 12.98         |       | 565 | 0.670                | 0.028     | 77.2%        | 15.142   |
| Sum b     |          |             | 15.058    | 77.18%           |               |       |     | 0.005                |           | 0.1%         | 0.119    |

Data (mean dpm) were obtained from Appendix 5, Table XXI, p. 102.

Desorption: VM-1 Soil, Solution B

| Parameter     | Value |
|---------------|-------|
| LSC vol. (mL) | 0.1   |
| Va (mL)       | 5.6   |
| Vb (mL)       | 5.5   |

| Mass           | Value |
|----------------|-------|
| Ads a (ug)     | 3.431 |
| Ads b (ug)     | 3.433 |
| Non-ads a (ug) | 0.806 |
| Non-ads b (ug) | 0.864 |

| Sample    | Mean dpm | Ceq (ug/mL) | Cs (ug/g) | Mag removed (ug) | % of adsorbed | Kd    | Koc | Table 7: Mean & s.d. |           |              |          |
|-----------|----------|-------------|-----------|------------------|---------------|-------|-----|----------------------|-----------|--------------|----------|
|           |          |             |           |                  |               |       |     | Caq (ug/mL)          | Cs (ug/g) | % of applied | Maq (ug) |
| VM-1 Ia   | 9409     | 0.275       | 2.311     | 1.541            | 36.36%        | 8.40  | 365 | 0.289                | 2.244     | 37.6%        | 1.603    |
| VM-1 Ib   | 10355    | 0.303       | 2.177     | 1.665            | 38.76%        | 7.19  | 313 | 0.020                | 0.095     | 1.7%         | 0.088    |
| VM-1 IIa  | 5733     | 0.168       | 1.523     | 0.939            | 22.15%        | 9.09  | 395 | 0.167                | 1.493     | 21.8%        | 0.928    |
| VM-1 IIb  | 5707     | 0.167       | 1.463     | 0.918            | 21.36%        | 8.77  | 381 | 0.001                | 0.042     | 0.6%         | 0.015    |
| VM-1 IIIa | 3080     | 0.090       | 1.127     | 0.504            | 11.90%        | 12.52 | 544 | 0.091                | 1.100     | 11.8%        | 0.504    |
| VM-1 IIIb | 3132     | 0.092       | 1.072     | 0.504            | 11.72%        | 11.71 | 509 | 0.001                | 0.039     | 0.1%         | 0.000    |
| VM-1 IVa  | 1818     | 0.053       | 0.881     | 0.298            | 7.03%         | 16.58 | 721 | 0.054                | 0.852     | 7.1%         | 0.301    |
| VM-1 IVb  | 1892     | 0.055       | 0.822     | 0.304            | 7.08%         | 14.87 | 646 | 0.002                | 0.042     | 0.0%         | 0.005    |
| Sum a     |          |             | 3.281     | 77.44%           | 11.14         |       | 484 | 0.150                | 0.042     | 78.2%        | 3.336    |
| Sum b     |          |             | 3.391     | 78.93%           |               |       |     | 0.003                |           | 1.0%         | 0.078    |

Data (mean dpm) were obtained from Appendix 5, Table XXV, p. 106.

Chemical: Orthosulfamuron (IR5878)  
 PC Code: 108209  
 MRID: 46219074  
 Guideline No: 163-1

Desorption: VM-1 Soil, Solution C

| Parameter     | Value |
|---------------|-------|
| LSC vol. (mL) | 0.5   |
| Va (mL)       | 5.7   |
| Vb (mL)       | 5.6   |

| Mass           | Value |
|----------------|-------|
| Ads a (ug)     | 0.690 |
| Ads b (ug)     | 0.641 |
| Non-ads a (ug) | 0.140 |
| Non-ads b (ug) | 0.161 |

Table 7: Mean & s.d.

| Sample    | Mean dpm | Caq (ug/mL) | Cs (ug/g) | Maq removed (ug) | % of adsorbed | Kd    | Koc | Caq (ug/mL) | Cs (ug/g) | % of applied | Maq (ug) |
|-----------|----------|-------------|-----------|------------------|---------------|-------|-----|-------------|-----------|--------------|----------|
| VM-1 Ia   | 9807     | 0.057       | 0.429     | 0.327            | 39.38%        | 7.47  | 325 | 0.056       | 0.422     | 39.0%        | 0.318    |
| VM-1 Ib   | 9462     | 0.055       | 0.415     | 0.310            | 38.62%        | 7.50  | 326 | 0.001       | 0.010     | 0.5%         | 0.012    |
| VM-1 IIa  | 5473     | 0.032       | 0.279     | 0.182            | 21.98%        | 8.72  | 379 | 0.031       | 0.278     | 21.7%        | 0.177    |
| VM-1 IIb  | 5253     | 0.031       | 0.277     | 0.172            | 21.44%        | 9.03  | 393 | 0.001       | 0.001     | 0.4%         | 0.007    |
| VM-1 IIIa | 3025     | 0.018       | 0.197     | 0.101            | 12.15%        | 11.13 | 484 | 0.018       | 0.198     | 12.2%        | 0.099    |
| VM-1 IIIb | 2979     | 0.017       | 0.199     | 0.098            | 12.16%        | 11.40 | 496 | 0.000       | 0.001     | 0.0%         | 0.002    |
| VM-1 IVa  | 1671     | 0.010       | 0.152     | 0.056            | 6.71%         | 15.51 | 674 | 0.010       | 0.153     | 6.7%         | 0.055    |
| VM-1 IVb  | 1656     | 0.010       | 0.155     | 0.054            | 6.76%         | 16.02 | 697 | 0.000       | 0.003     | 0.0%         | 0.001    |
| Sum a     |          |             |           | 0.666            | 80.22%        | 10.85 | 472 | 0.029       |           | 79.6%        | 0.650    |
| Sum b     |          |             |           | 0.634            | 78.98%        |       |     | 0.001       |           | 0.9%         | 0.023    |

Data (mean dpm) were obtained from Appendix 5, Table XXIX, p. 110.

Desorption: VM-1 Soil, Solution D

| Parameter     | Value |
|---------------|-------|
| LSC vol. (mL) | 0.5   |
| Va (mL)       | 5.7   |
| Vb (mL)       | 5.8   |

| Mass           | Value |
|----------------|-------|
| Ads a (ug)     | 0.161 |
| Ads b (ug)     | 0.160 |
| Non-ads a (ug) | 0.030 |
| Non-ads b (ug) | 0.028 |

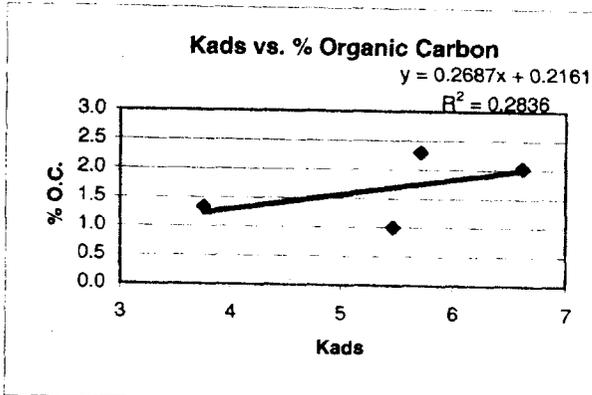
Table 7: Mean & s.d.

| Sample       | Mean dpm | Caq (ug/mL) | Cs (ug/g) | Maq removed (ug) | % of adsorbed | Kd    | Koc | Caq (ug/mL) | Cs (ug/g) | % of applied | Maq (ug) |
|--------------|----------|-------------|-----------|------------------|---------------|-------|-----|-------------|-----------|--------------|----------|
| VM-1 Ia      | 2122     | 0.012       | 0.104     | 0.071            | 37.10%        | 8.36  | 364 | 0.012       | 0.104     | 36.9%        | 0.070    |
| VM-1 Ib      | 2025     | 0.012       | 0.104     | 0.069            | 36.67%        | 8.82  | 383 | 0.000       | 0.000     | 0.3%         | 0.001    |
| VM-1 IIa     | 1168     | 0.007       | 0.072     | 0.039            | 20.42%        | 10.56 | 459 | 0.007       | 0.072     | 20.5%        | 0.039    |
| VM-1 IIb     | 1132     | 0.007       | 0.072     | 0.038            | 20.50%        | 10.92 | 475 | 0.000       | 0.000     | 0.1%         | 0.000    |
| VM-1 IIIa    | 646      | 0.004       | 0.055     | 0.022            | 11.29%        | 14.44 | 628 | 0.004       | 0.055     | 11.2%        | 0.021    |
| VM-1 IIIb    | 610      | 0.004       | 0.055     | 0.021            | 11.05%        | 15.49 | 673 | 0.000       | 0.000     | 0.2%         | 0.001    |
| VM-1 IVa     | 420      | 0.002       | 0.042     | 0.014            | 7.34%         | 17.21 | 748 | 0.002       | 0.043     | 7.1%         | 0.013    |
| VM-1 IVb     | 375      | 0.002       | 0.044     | 0.013            | 6.79%         | 20.14 | 876 | 0.000       | 0.001     | 0.4%         | 0.001    |
| Sum a        |          |             |           | 0.145            | 76.15%        | 13.24 | 576 | 0.006       |           | 75.6%        | 0.143    |
| Sum b        |          |             |           | 0.140            | 75.01%        |       |     | 0.000       |           | 0.8%         | 0.003    |
| Overall mean |          |             |           |                  |               | 12.05 | 524 |             |           | 77.65%       |          |
| Overall s.d. |          |             |           |                  |               | 4.36  | 190 |             |           | 1.67%        |          |
| Phase 4 mean |          |             |           |                  |               | 18.12 | 788 |             |           |              |          |
| Phase 4 s.d. |          |             |           |                  |               | 3.03  | 132 |             |           |              |          |

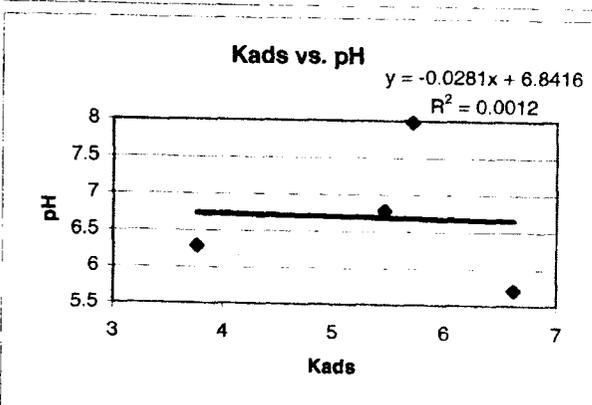
Data (mean dpm) were obtained from Appendix 5, Table XXXIII, p. 114.

**Chemical:** Orthosulfamuron (IR5878)  
**PC Code:** 108209  
**MRID:** 46219074  
**Guideline No:** 163-1

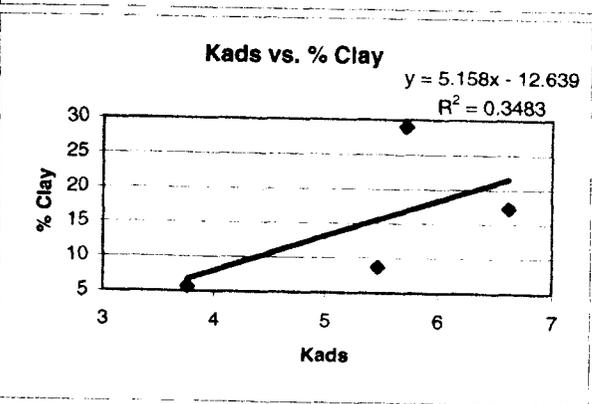
| Soil       | Kads | % organic carbon |
|------------|------|------------------|
| Sandy loam | 3.76 | 1.33             |
| Silt loam  | 6.62 | 2.03             |
| Silt loam  | 5.47 | 1.00             |
| Clay loam  | 5.72 | 2.30             |



| Soil       | Kads | pH   |
|------------|------|------|
| Sandy loam | 3.76 | 6.29 |
| Silt loam  | 6.62 | 5.71 |
| Silt loam  | 5.47 | 6.78 |
| Clay loam  | 5.72 | 7.98 |



| Soil       | Kads | % clay |
|------------|------|--------|
| Sandy loam | 3.76 | 5.7    |
| Silt loam  | 6.62 | 17.3   |
| Silt loam  | 5.47 | 8.7    |
| Clay loam  | 5.72 | 29.0   |



Data were obtained from Table 1, p. 32. Kads values were calculated using Figure 1.