

## Data Evaluation Report on the aerobic biotransformation of prothioconazole (JAU6476) in a water-sediment system

PMRA Submission Number 2004-0843

EPA MRID Number 46246515



**Data Requirement:**

PMRA DATA CODE:	8.2.3.5.4
EPA DP Barcode:	DP 303488
OECD Data Point:	IIA 7.8.1
EPA Guideline:	162-4

**Test material:**

Common name: Prothioconazole  
 chemical name:  
 IUPAC: 2-[2-(1-Chlorocyclopropyl)-3-(2-chlorophenyl)-2-hydroxypropyl]-1,2-dihydro-3H-1,2,4-triazole-3-thione  
 CAS name: 2-[2-(1-Chlorocyclopropyl)-3-(2-chlorophenyl)-2-hydroxypropyl]-1,2-dihydro-3H-1,2,4-triazole-3-thione  
 CAS No: 178928-70-6  
 synonyms: JAU 6476 Technical  
 SMILES string: C1C1(C(Cc2ccccc2Cl)(CN2N=CNC2=S)O)CC1.

**Primary Reviewer (officer number):** Émilie Larivière (#1269)  
 EAD, PMRA

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**Date:** May 11, 2005 5/11/05

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**Date:** June 17, 2005

**Secondary Reviewer(s) (officer number):** Roxolana Kashuba  
 EPA/OPP/EFED/ERB4

*Roxolana Kashuba*  
**Date:** Aug. 30, 2005

**Company Code** BCZ

**Active Code** PRB

**Use Site Category** 7, 13, 14 (Industrial Oil Seed Crops and Fibre Crops, Terrestrial Feed Crops, Terrestrial Food Crops)

**EPA PC Code** 113961

**CITATION:** Brumhard, B. and M. Oli. 2001. Amended report 2002. Aerobic Degradation and Metabolism of the Active Ingredient JAU6476 in the Water/Sediment System. Performing Laboratory: Bayer AG, Germany. Bayer CropScience, North Carolina. Unpublished. Report No. MR-395/01. December 22, 2001, amended February 27, 2002.



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### **EXECUTIVE SUMMARY:**

The aerobic aquatic biotransformation of [phenyl-UL-<sup>14</sup>C] and [3,5-triazole-<sup>14</sup>C]-labelled 2-[2-(1-Chlorocyclopropyl)-3-(2-chlorophenyl)-2-hydroxypropyl]-1,2-dihydro-3H-1,2,4-triazole-3-thione (prothioconazole; JAU6476; purity >99%) was studied in two water/sediment systems: one pond system collected from Hönniger Weiher, Germany (water pH 7.84, dissolved organic carbon <2 mg/L; sediment texture loam (USDA), pH 6.6, organic carbon 4.8%), and one lake system collected from Anglerweiher, Germany (water pH 7.45, dissolved organic carbon <2 mg/L; sediment texture loamy sand (USDA), pH 8.5, organic carbon 1.37%). Samples were incubated in the dark under aerobic conditions at 20±1°C for 121 days. [<sup>14</sup>C]Prothioconazole was applied at the rate of 0.067 mg a.i./L (30 cm depth, equivalent to 200 g a.i./ha). The sediment:water ratio used was 1:10 (w/w), based on the dry weight of the sediment. This study was conducted in accordance with Commission Directive 95/36/EC, SETAC and BBA Guidelines, and was in compliance with OECD, US EPA-FIFRA (40 CFR Part 160), and German and Japanese standards of Good Laboratory Practice. Each sample consisted of a glass vessel, containing the sediment/water, attached to a trap for the collection of CO<sub>2</sub> and organic volatile compounds. Aerobic conditions were maintained by stirring oxygen into the water layer. The water layers remained moderately oxidizing to moderately reducing throughout the study; sediment layers remained moderately oxidizing to reducing throughout the study. Samples were analysed at 0, 1, 3, 7, 14, 29, 59 and 121 days of incubation. The water was decanted, centrifuged, and analysed directly. The sediment samples were extracted with acetonitrile/water (9:1 v/v), mixed with sea sand, then hot extracted with acetonitrile/water (9:1 v/v) and L-cysteinhydrochlorid-monohydrate. Volatile organic compounds were eluted with acetonitrile while <sup>14</sup>CO<sub>2</sub> was liberated with HCl and absorbed by scintillation cocktails. The radioactivity was quantified by Liquid Scintillation Counting (LSC). Parent and transformation products were identified by Thin Layer Chromatography (TLC), High Performance Liquid Chromatography (HPLC), Liquid Chromatography-Mass Spectrometry (LC-MS) or LC-MS/MS methods. The non-extractable radioactivity was determined by LSC following combustion of extracted soil. The limit of quantification (LOQ) was about 0.1% of the applied radioactivity.

The mean recovery of radioactive material in the total system was an average of 98.0±2.2% of applied (range of 94.5-101.6% of applied) and 98.2±3.3% of applied (range of 91.7-101.2% of applied) for the [phenyl-UL-<sup>14</sup>C] and [3,5-triazole-<sup>14</sup>C] labels, respectively, in the Honniger Weiher system. The mean recovery of radioactive material in the total system was an average of 99.5±3.2% of applied (range of 93.7-102.4% of applied) and 101.7±1.4% of applied (range of 100.3-104.2% of applied) for the [phenyl-UL-<sup>14</sup>C] and [3,5-triazole-<sup>14</sup>C] labels, respectively, in the Anglerweiher system. No pattern of decline in material balances were observed during the 121 day study.

From day 0 to the end of the study (day 121), recovery of radioactive material in the water of the Honniger Weiher system decreased from 68.0% to 1.5% of the applied and from 67.3% to 4.7% of the applied, respectively, for the [phenyl-UL-<sup>14</sup>C] and [3,5-triazole-<sup>14</sup>C] labels. Recovery of radioactive material in the sediment of the Honniger Weiher system increased from 30.7% of the applied at day 0 to a maximum of 92.9% of the applied at day 14 and decreased to 81.1% by study

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termination (day 121) for the [phenyl-UL-<sup>14</sup>C] label and increased from 33.3% of the applied at day 0 to 94.2% of the applied at day 14 and ranged from 89.8-97.3% of the applied for the remainder of the study for the [3,5-triazole-<sup>14</sup>C] label.

Recovery of radioactive material in the water of the Anglerweiher system decreased from 79.4% to 13.8% of the applied from day 0 to the end of the study (day 121) for the [phenyl-UL-<sup>14</sup>C] label and decreased from 82.9% of the applied to a minimum of 38.7% of the applied at day 29 and increased to 55.7% of the applied by study termination (day 121) for the [3,5-triazole-<sup>14</sup>C] label. Recovery of radioactive material in the sediment of the Anglerweiher system increased from 23.0% of the applied at day 0 to 50.2% of the applied at day 3 and ranged from 50.9-63.4% of the applied for the remainder of the study for the [phenyl-UL-<sup>14</sup>C] label, and increased from 18.5% of the applied at day 0 to a maximum of 61.8% of the applied at day 7 and decreased to 43.0% of the applied by study termination (day 121) for the [3,5-triazole-<sup>14</sup>C] label.

Following application of [<sup>14</sup>C] prothioconazole to the water layer, [<sup>14</sup>C] residues associated with the sediment increased in proportion over the course of the study. In the Honniger Weiher system, the water-sediment distribution ratios were ca. 2:1 at time 0, 0.1:1 at 7 days, and from 0.02:1 to 0.07:1 at 14 through 121 days (study termination) for both labels. In the Anglerweiher system, the water-sediment distribution ratios were ca. 4:1 at time 0, 1:1 at 3 days, and from 0.51:1 to 0.77:1 at 7 through 29 days (study termination) for both labels. By study termination, however, the proportion of [<sup>14</sup>C] residues associated with the sediment increased to a water-sediment distribution ratio of 0.27:1 for the [phenyl-UL-<sup>14</sup>C] label but decreased to a water-sediment distribution ratio of 1.30:1 for the [3,5-triazole-<sup>14</sup>C] label.

In the Honniger Weiher system, [<sup>14</sup>C]prothioconazole concentrations in the water decreased from 52.7% and 59.8% of the applied at day 0 to <MDL at study termination for the [phenyl-UL-<sup>14</sup>C] and [3,5-triazole-<sup>14</sup>C] labels, respectively. In the Anglerweiher system, [<sup>14</sup>C]prothioconazole concentrations in the water decreased from 68.7% and 76.3% of the applied at day 0 to 0.4% of the applied and <MDL at study termination for the [phenyl-UL-<sup>14</sup>C] and [3,5-triazole-<sup>14</sup>C] labels, respectively. In the Honniger Weiher system, [<sup>14</sup>C]prothioconazole concentrations in the sediment increased from 7.2% and 12.6% of the applied at day 0 to ranges of 7.5-23.4% and 14.4-22.6% of the applied between 1 and 59 days, and were 9.5% and 6.8% of the applied at study termination for the [phenyl-UL-<sup>14</sup>C] and [3,5-triazole-<sup>14</sup>C] labels, respectively. In the Anglerweiher system, [<sup>14</sup>C]prothioconazole concentrations in the sediment increased from 17.0% and 13.6% of the applied at day 0 to a maximum of 21.0% and 18.3% of the applied at day 1, and decreased to 3.4% and 3.3% of the applied at study termination for the [phenyl-UL-<sup>14</sup>C] and [3,5-triazole-<sup>14</sup>C] labels, respectively. In the Honniger Weiher system, [<sup>14</sup>C]prothioconazole concentrations in the total system decreased from 59.9% and 72.4% of the applied at day 0 to 9.5% and 6.8% of the applied at study termination for the [phenyl-UL-<sup>14</sup>C] and [3,5-triazole-<sup>14</sup>C] labels, respectively. In the Anglerweiher system, [<sup>14</sup>C]prothioconazole concentrations in the total system decreased from 85.7% and 89.9% of the applied at day 0 to 3.8% and 3.3% of the applied at study termination for the [phenyl-UL-<sup>14</sup>C] and [3,5-triazole-<sup>14</sup>C] labels, respectively.

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The major transformation products detected in water were **JAU6476-desthio** (SXX0665; 2-[2-(1-chlorocyclopropyl)-3-(2-chlorophenyl)-2-hydroxypropyl]-1,2-dihydro-3H-1,2,4-triazole), and **1,2,4-triazole**. JAU6476-desthio was observed at maximum concentrations of 13.9% ([phenyl-UL-<sup>14</sup>C] label, day 0) and 32.3% ([phenyl-UL-<sup>14</sup>C] label, day 7) of applied radioactivity, in the Honniger Weiher and Anglerweiher systems, respectively, and 1,2,4-triazole was observed at a maximum concentration of 37.2% ([3,5-triazole-<sup>14</sup>C] label, day 121) of applied radioactivity in the Anglerweiher system. The corresponding concentrations of JAU6476-desthio in water at the end of the study period were <MDL and 1.2% of applied radioactivity, respectively, and the corresponding concentration of 1,2,4-triazole in water at the end of the study period was 37.2% of the applied radioactivity. The 1,2,4-triazole degradate was not a major transformation product in the Honniger Weiher system (maximum of 0.8% for [3,5-triazole-<sup>14</sup>C] label, day 59). Two major transformation products were detected in sediment: **JAU6476-desthio** and **JAU6476-S-methyl** (WAK7861; alpha-1(1-chlorocyclopropyl)-alpha-[(2-chlorophenyl)methyl]-3-(methylthio)-1H-1,2,4-triazole-1-ethanol). JAU6476-desthio was detected with maximum concentrations of 21.9% ([phenyl-UL-<sup>14</sup>C] label, day 59) and 26.9% (both labels, day 14) of applied radioactivity, observed in the Honniger Weiher and Anglerweiher systems, respectively. The corresponding concentrations in sediment at the end of the study period were 11.1% and 7.1-8.2% of applied radioactivity, respectively. JAU6476-S-methyl was detected with maximum concentrations of 9.6% ([3,5-triazole-<sup>14</sup>C] label, day 7) of applied radioactivity in the Anglerweiher system and is considered a major transformation product of prothioconazole in aerobic sediment. The corresponding concentration of JAU6476-S-methyl in sediment at the end of the study period was 1.9% of the applied radioactivity.

The minor transformation products in water were **JAU6476-S-methyl** (WAK7861; alpha-1(1-chlorocyclopropyl)-alpha-[(2-chlorophenyl)methyl]-3-(methylthio)-1H-1,2,4-triazole-1-ethanol), **JAU6476-triazolinone** (WAK7002; 2-[2-(1-chlorocyclopropyl)-3-(2-chlorophenyl)-2-hydroxypropyl]-1,2-dihydro-3H-1,2,4-triazole-3-one), **JAU6476-triazolyketone** (WAK4995), eight unidentified transformation products (M3, M4a, M5, M6, M9, M10, M12, M13) and an unreported number of minor metabolites reported together, observed at maximums of 0.1 to 8.0% of applied radioactivity in the water of both systems, using both radiolabels. The minor transformation products in sediment were **1,2,4-triazole**, **JAU6476-triazolinone** (WAK7002; 2-[2-(1-chlorocyclopropyl)-3-(2-chlorophenyl)-2-hydroxypropyl]-1,2-dihydro-3H-1,2,4-triazole-3-one), **JAU6476-triazolyketone** (WAK4995), nine unidentified transformation products (M3, M3a, M4a, M5, M6, M9, M10, M12, M13) and an unreported number of minor metabolites reported together, observed at maximums of 0.1-6.1% of applied radioactivity in the sediment of both systems, using both radiolabels. 1,2,4-Triazole and JAU6476-triazolyketone (WAK4995) were transformation products unique to samples treated with [triazole-3,5-<sup>14</sup>C]prothioconazole. Unidentified <sup>14</sup>C in the total system during the study (including origin and diffuse radioactivity in the aqueous layer and in organic and hot sediment extracts, and radioactivity in exhaustive

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sediment extract not identified due to high matrix content) ranged from 0.1% to 8.9% of the applied amount.

In the Honniger Weiher system, extractable [<sup>14</sup>C]residues in sediment (organic and hot extracts combined) for the [phenyl-UL-<sup>14</sup>C] label increased from 13.0% of the applied at day 0 to a range of 45.8-52.0% of the applied at days 14-59, and decreased to 39.3% of the applied at study termination (121 days). In the Honniger Weiher system, extractable [<sup>14</sup>C]residues in sediment (organic and hot extracts combined) for the [3,5-triazole-<sup>14</sup>C] label increased from 18.6% of the applied at day 0 to a maximum of 47.7% of the applied at day 14, and decreased to 30.3% of the applied at study termination (121 days). In the Anglerweiher system, extractable [<sup>14</sup>C]residues in sediment (organic and hot extracts combined) increased from 21.5% and 17.2% of the applied at day 0 to a maximum of 45.5% and 47.2% of the applied at days 14 and 7, respectively, and decreased to 19.6% and 24.1% of the applied at study termination (121 days) for the [phenyl-UL-<sup>14</sup>C] and [3,5-triazole-<sup>14</sup>C] labels, respectively.

In the Honniger Weiher system, non-extractable [<sup>14</sup>C]residues in sediment (including residues in filter) for the [phenyl-UL-<sup>14</sup>C] label increased from 8.2% of the applied at day 0 to 36.5% of the applied at day 7, and increased to a range of 45.3-46.4% of the applied from 59 days to study termination (121 days). In the Honniger Weiher system, non-extractable [<sup>14</sup>C]residues in sediment (including residues in filter) for the [3,5-triazole-<sup>14</sup>C] label increased from 8.1% of the applied at day 0 to a range of 36.0-39.4% of the applied at days 7-59, and increased to 46.7% of the applied at study termination (121 days). In the Anglerweiher system, non-extractable [<sup>14</sup>C]residues in sediment (including residues in filter) for the [phenyl-UL-<sup>14</sup>C] label increased from 1.5% of the applied at day 0 to 30.3% of the applied at study termination (121 days). In the Anglerweiher system, non-extractable [<sup>14</sup>C]residues in sediment (including residues in filter) for the [3,5-triazole-<sup>14</sup>C] label increased from 1.3% of the applied at day 0 to 20.9% of the applied at day 59, and decreased to 15.3% of the applied at study termination (121 days). In the Honniger Weiher system, [<sup>14</sup>C]residues in the exhaustive extract of sediment, which were not identified due to high matrix content, ranged from 4.3-9.5% and 5.6-14.2% of applied for the [phenyl-UL-<sup>14</sup>C] and [3,5-triazole-<sup>14</sup>C] labels, respectively. In the Anglerweiher system, [<sup>14</sup>C]residues in the exhaustive extract of sediment were not measured for any interval other than at study termination (121 days), where they were observed at 1.0% and 3.6% of applied for the [phenyl-UL-<sup>14</sup>C] and [3,5-triazole-<sup>14</sup>C] labels, respectively.

At the end of the study, 14.8% and 1.9% of applied radioactivity in the Honniger Weiher system was present as CO<sub>2</sub> for the [phenyl-UL-<sup>14</sup>C] and [3,5-triazole-<sup>14</sup>C] labels, respectively. At the end of the study, 29.0% and 1.9% of applied radioactivity in the Anglerweiher system was present as CO<sub>2</sub> for the [phenyl-UL-<sup>14</sup>C] and [3,5-triazole-<sup>14</sup>C] labels, respectively. Volatile organic compounds were <0.1% of the applied radioactivity throughout the study for both radiolabels, in both systems.

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The dissipation of prothioconazole from water, sediment and from the total system generally did not follow first-order kinetics with one degradation rate for every sampling interval, but, rather, an initial rapid transformation phase was followed by a second slower transformation phase. The water, sediment and total system half-lives/ $DT_{50}$ s and  $DT_{90}$ s of [phenyl-UL- $^{14}C$ ] and [triazole-3,5- $^{14}C$ ]prothioconazole in an aerobic water-sediment system were calculated by PMRA, using SigmaPlot, following a first order multi-compartment model of exponential decay for Honniger Weiher total system, Anglerweiher sediment and Anglerweiher total system, a single, two-parameter nonlinear model for Honniger Weiher water, Honniger Weiher sediment ([phenyl-UL- $^{14}C$ ] label), and Anglerweiher water, and a log-linear model for Honniger Weiher sediment ([3,5-triazole- $^{14}C$ ] label). The dissipation in the sediment was calculated from the time the maximum concentration was detected, by excluding day 0-1 data in the Honniger Weiher sediment and excluding day 0 data for the Anglerweiher sediment. Water and total system half-lives of [phenyl-UL- $^{14}C$ ] and [triazole-3,5- $^{14}C$ ]prothioconazole were calculated by EPA via linear regression on log-transformed data using all data points on all datasets.

In the Honniger Weiher system, the PMRA-calculated half-lives are 0.9 and 0.7 days in the water, and 58.9 and 83.5 days in the sediment for [phenyl-UL- $^{14}C$ ] and [triazole-3,5- $^{14}C$ ] labels, respectively. The PMRA-calculated  $DT_{50}$  in the total Honniger Weiher system was 3.9 and 1.3 days, for the [phenyl-UL- $^{14}C$ ] and [triazole-3,5- $^{14}C$ ] labels, respectively. The PMRA-calculated half-lives in the water of the Anglerweiher system were 1.0 and 1.1 days for the [phenyl-UL- $^{14}C$ ] and [triazole-3,5- $^{14}C$ ] labels, respectively. The PMRA-calculated  $DT_{50}$ s were 6.9 and 8.4 days in the sediment, and 1.6 and 1.6 days in the total system for [phenyl-UL- $^{14}C$ ] and [triazole-3,5- $^{14}C$ ] labels, respectively. EPA-calculated half-lives for the Honniger Weiher system are 15.5, 14.3, and 14.9 days in the water, and 49.5, 47.5, and 48.5 days in the total system for [phenyl-UL- $^{14}C$ ] labels, [triazole-3,5- $^{14}C$ ] labels, and both labels combined, respectively. EPA-calculated half-lives for the Anglerweiher system are 20.3, 15.8, and 17.8 days in the water, and 34.7, 32.5, and 33.6 days in the total system for [phenyl-UL- $^{14}C$ ] labels, [triazole-3,5- $^{14}C$ ] labels, and both labels combined, respectively.

The proposed biotransformation pathway of prothioconazole in an aerobic water-sediment system is shown in Figure 1. The sulfur of prothioconazole may be methylated to form JAU6476-S-methyl, which mineralizes to  $CO_2$ . Prothioconazole may also be desulfurized to form JAU6476-desthio, which can either have its methylated, chlorinated phenyl ring cleaved to form JAU6476-triazolyketone or mineralize to  $CO_2$ . JAU6476-triazolyketone can then degrade to 1,2,4-triazole, which can mineralize to  $CO_2$ . Finally prothioconazole can replace its thione with a ketone to form JAU6476-triazolinone, which may form JAU6476-desthio by unknown mechanism. The eight observed, unidentified minor transformation products (M3, M3a, M4a, M5, M6, M9, M10, M12, and M13) and the unreported number of unidentified metabolites reported together are not included in the discussion of transformation pathway.

### Results Synopsis:

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Test system used: **water/loam (Honniger Weiher pond system)**

**PMRA:**

Half-life/DT<sub>50</sub> in water: 0.9 days ([phenyl-UL-<sup>14</sup>C] label); 0.7 days ([triazole-3,5-<sup>14</sup>C] label)

Half-life/DT<sub>50</sub> in sediment: 58.9 days ([phenyl-UL-<sup>14</sup>C] label); 83.5 days ([triazole-3,5-<sup>14</sup>C] label)

Half-life/DT<sub>50</sub> in total system: 3.9 days ([phenyl-UL-<sup>14</sup>C] label); 1.3 days ([triazole-3,5-<sup>14</sup>C] label)

**EPA:**

Half-life in water: 15.5 days ([phenyl-UL-<sup>14</sup>C] label); 14.3 days ([triazole-3,5-<sup>14</sup>C] label)  
14.9 days (both [phenyl-UL-<sup>14</sup>C] and [triazole-3,5-<sup>14</sup>C] labels)

Half-life in total system: 49.5 days ([phenyl-UL-<sup>14</sup>C] label); 47.5 days ([triazole-3,5-<sup>14</sup>C] label)  
48.5 days (both [phenyl-UL-<sup>14</sup>C] and [triazole-3,5-<sup>14</sup>C] labels)

Test system used: **water/loamy sand (Anglerweiher lake system)**

**PMRA:**

Half-life/DT<sub>50</sub> in water: 1.0 days ([phenyl-UL-<sup>14</sup>C] label); 1.1 days ([triazole-3,5-<sup>14</sup>C] label)

Half-life/DT<sub>50</sub> in sediment: 6.9 days ([phenyl-UL-<sup>14</sup>C] label); 8.4 days ([triazole-3,5-<sup>14</sup>C] label)

Half-life/DT<sub>50</sub> in total system: 1.6 days ([phenyl-UL-<sup>14</sup>C] label); 1.6 days ([triazole-3,5-<sup>14</sup>C] label)

**EPA:**

Half-life in water: 20.3 days ([phenyl-UL-<sup>14</sup>C] label); 15.8 days ([triazole-3,5-<sup>14</sup>C] label)  
17.8 days (both [phenyl-UL-<sup>14</sup>C] and [triazole-3,5-<sup>14</sup>C] labels)

Half-life in total system: 34.7 days ([phenyl-UL-<sup>14</sup>C] label); 32.5 days ([triazole-3,5-<sup>14</sup>C] label)  
33.6 days (both [phenyl-UL-<sup>14</sup>C] and [triazole-3,5-<sup>14</sup>C] labels)

Major transformation products:

JAU6476-desthio (water and sediment, both systems)

1,2,4-triazole (water, triazole label, Anglerweiher lake system only)

JAU6476-S-methyl (sediment, Anglerweiher lake system)

Minor transformation products:

JAU6476-S-methyl (water (both systems) and sediment (Honniger Weiher pond system))

JAU6476-triazolinone (water and sediment, both systems)

1,2,4-triazole (sediment, triazole label, both systems; water, triazole label, Honniger Weiher pond system only)

JAU6476-triazolylketone (water and sediment, triazole label, both systems)

Nine unidentified metabolites (water and sediment, both labels, both systems)

Unreported number of unidentified metabolites reported together (water and sediment, triazole label, Anglerweiher lake system)

**Study Acceptability:** This study is classified supplemental by the U.S. EPA for an aerobic biotransformation study in a water-sediment system because multiple samples were not used per interval, use of exclusively foreign soils without reporting taxonomic classifications, and lack of water/sediment characterization of actual samples used in the study. The PMRA does not use the same classification scheme as the U.S. EPA. This study is classified as acceptable to the PMRA.

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**I. MATERIALS AND METHODS**

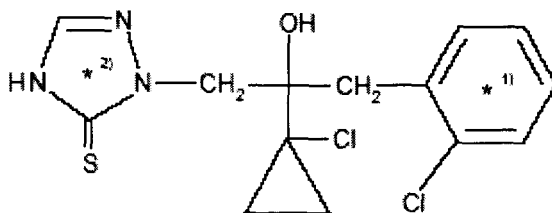
**GUIDELINE FOLLOWED:** Commission Directive 95/36/EC amending the Council Directive 91/414/EEC concerning the placing of plant protection products on the market (Annexes I and II, Fate and Behaviour in the Environment) July 14, 1995; SETAC Procedure for Assessing the Environmental Fate and Ecotoxicity of Pesticides; BBA Guidelines for the official testing of plant protectants in water/sediment-systems, December 1990. The following deviation from the protocol was noted by the study authors: Water and sediment from both locations were sampled on March 24, 1998 instead of February 18, 1998.

**COMPLIANCE:** This study was conducted in compliance with current OECD-GLP. Also meets US EPA- FIFRA GLP (40 CFR Part 160), Chemikaliengesetz, dated July 25, 1994, current version of Annex 1, and Japan MAFF, 11 Nousan No. 6283, with the exception that recognized differences exist between GLP principles/standards of OECD and those of FIFRA and Japan MAFF (for instance, authority granted Agency inspectors). Signed and dated GLP, Quality Assurance and Data Confidentiality statements were provided.

**A. MATERIALS:**

**1. Test Material** [phenyl-UL-<sup>14</sup>C] and [triazole-3,5-<sup>14</sup>C]prothioconazole (JAU6476; p. 13)

**Chemical Structure:**



\* Labelling positions: <sup>1)</sup> phenyl-UL-<sup>14</sup>C; <sup>2)</sup> 3,5-triazole-<sup>14</sup>C



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**Description:** Solid, dried in vacuo. (Appendices 1 and 2; pp. 36 and 37)

**Purity:**

[phenyl-UL-<sup>14</sup>C]prothioconazole

Analytical purity: >99% Lot No.: 12106/1  
 Radiochemical purity: >99%  
 Specific activity: 3.81 MBq/mg (103 μCi/mg)  
 Locations of the radio label: phenyl ring

[triazole-3,5-<sup>14</sup>C]prothioconazole

Analytical purity: >99% Lot No.: 10708/1  
 Radiochemical purity: >99%  
 Specific activity: 1.94 MBq/mg (52.3 μCi/mg)  
 Locations of the radio label: triazole ring  
 (p. 14, Appendices 1 and 2; pp. 36 and 37)

**Storage conditions of test chemicals:**

Freezer (Appendices 1 and 2; pp. 36 and 37)

Table 1. Physico-chemical properties of prothioconazole.

Parameter	Values	Comments										
Water solubility (20°C)	<table border="1"> <thead> <tr> <th>pH</th> <th>Solubility (mg/L)</th> </tr> </thead> <tbody> <tr> <td>4</td> <td>5</td> </tr> <tr> <td>8</td> <td>300</td> </tr> <tr> <td>9</td> <td>2000</td> </tr> </tbody> </table>	pH	Solubility (mg/L)	4	5	8	300	9	2000	Low solubility at acidic pH, very soluble at alkaline pHs.		
pH	Solubility (mg/L)											
4	5											
8	300											
9	2000											
Vapour pressure/volatility	<table border="1"> <thead> <tr> <th>Temperature (°C)</th> <th>Vapor pressure (Pa)</th> </tr> </thead> <tbody> <tr> <td>20</td> <td>&lt;&lt;4 x 10<sup>-7</sup></td> </tr> <tr> <td>25</td> <td>&lt;&lt;4 x 10<sup>-7</sup></td> </tr> </tbody> </table>	Temperature (°C)	Vapor pressure (Pa)	20	<<4 x 10 <sup>-7</sup>	25	<<4 x 10 <sup>-7</sup>	Relatively non-volatile under field conditions.				
Temperature (°C)	Vapor pressure (Pa)											
20	<<4 x 10 <sup>-7</sup>											
25	<<4 x 10 <sup>-7</sup>											
UV absorption	peak maxima at 275 nm. No absorption at > 300 nm.	Phototransformation is not expected to be an important route of transformation										
pK <sub>a</sub>	pK <sub>a</sub> = 6.9	Weak acid, anion at neutral and alkaline pHs										
log K <sub>ow</sub>	<table border="1"> <thead> <tr> <th>pH</th> <th>log K<sub>ow</sub></th> </tr> </thead> <tbody> <tr> <td>4</td> <td>4.16</td> </tr> <tr> <td>7</td> <td>3.82</td> </tr> <tr> <td>9</td> <td>2.0</td> </tr> <tr> <td>unbuffered:</td> <td>4.05</td> </tr> </tbody> </table>	pH	log K <sub>ow</sub>	4	4.16	7	3.82	9	2.0	unbuffered:	4.05	Potential for bioaccumulation at neutral and acidic pH.
pH	log K <sub>ow</sub>											
4	4.16											
7	3.82											
9	2.0											
unbuffered:	4.05											

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Stability of compound at room temperature, if provided	Thermally stable at room temperature under air. Stable to most metals. Colour changes observed in the presence of copper materials.	Thermally stable at room temperature under air.
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Data obtained from Chemistry Review.

**2. Water collection, storage and properties**

Table 2: Description of water-sediment collection and storage.

Description	Pond system	Lake system
Geographic location	artificially dammed pond near Wipperfürth, Germany	small lake Leverkusen, Germany
Pesticide use history at the collection site	not reported	
Collection procedures for	water:	not reported
	sediment:	sieved through 5 mm screen
Sampling depth for	water:	not reported
	sediment:	not reported
Storage conditions	The water and sediment collected from both sites were kept under aerated conditions in the laboratory and used within a few days after collection.	
Storage length	March 24, 1998 to April 21, 1998 (date of application stated on p.12 of study report).	
Preparation of water and sediment samples (eg: water -filtered/not filtered; sediment -sieved/not sieved)	Before the test, water and sediment phases of each batch taken from the field were separated by decanting. The aqueous sediment was passed through a 5 mm mesh sieve and mixed. After settling, the remaining water was decanted, the sieved sediment was mixed again and the dry weight was determined. Amounts of the sediment corresponding to 50 g dry weight were weighed into each incubation vessel. Plant debris and stones were removed from the water and the supernatant water settled overnight was added to reach a total volume of 450 mL water whereas the moisture content of the sediment was considered. In order to obtain equilibration before application of the active ingredient, the vessels were incubated under test conditions for 27 days in the case of the pond system and 19 days in the case of the lake system.	

Table 3: Properties of the water.

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Property	Hönniger Weiher pond system		Anglerweiher lake system	
Temperature (°C)	3.8		8.1	
pH	7.84 (in the field) 5.48-5.42 (at study initiation)		7.45 (in the field) 8.17-81.9 (at study initiation)	
Redox potential (mV)	Initial (n=2)	Final (n=2)	Initial (n=2)	Final (n=2)
	248-259	165-200	221-224	126-154
Oxygen concentration (% relative to oxygen saturation at 25°C)	Initial (n=2)	Final (n=2)	Initial (n=2)	Final (n=2)
	84-85	92-93	91	94-95
Dissolved organic carbon (mg/L)	<2		water collected in the field on February 18, 1998 : <2; water collected from test vessels on day 121: 3	
Hardness (CaCO <sub>3</sub> ) (grad dH)	water collected in the field on February 18, 1998 : 3.7; water collected from test vessels on day 121: 4.0		water collected in the field on February 18, 1998 : 10.2; water collected from test vessels on day 121: 12.1	
Electrical conductivity	not reported		not reported	
Biomass (mg microbial C/100 g or CFU or other)	Biomass in water not reported		Biomass in water not reported	

Data obtained from p. 15-16, and Appendix 8, p. 44.

Table 4: Properties of the sediment.

Property	Hönniger Weiher pond system		Anglerweiher lake system	
Textural classification	loam		loamy sand	
% sand	33.8		81.7	
% silt	48.2		11.6	
% clay	18		6.7	
pH	6.6		8.5	
Organic carbon (%)	4.8		1.37	
CEC (meq/100 g)	15		8	
Redox potential (mV)	Initial (n=2)	Final (n=2)	Initial (n=2)	Final (n=2)
	40-150	-34 to -26	234-240	204-261

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Particle density (g/mL)	2.52	2.61
Initial respiratory activity of microflora in control samples (mg CO <sub>2</sub> /hr/kg sediment)	12 pH (KCl) = 5.4	6 pH (KCl) = 7.9

Data obtained from p. 15-16, and Appendices 7 and 9, p. 43 and 45.

**B. EXPERIMENTAL DESIGN:**

**1. Preliminary experiments:** No preliminary experiments were described.

**2. Experimental conditions:**

Table 5: Study design.

Criteria		Details
Duration of the test		121 days
Water: Filtered/unfiltered water: Type and size of filter used, if any:		unfiltered.
Amount of sediment and water per treatment		Honniger Weiher pond system: water: 380.7 mL; sediment: 119.3 g moist weight (50 g dry weight)  Anglerweiher lake system: water: 432.6 mL; sediment: 67.4 g moist weight (50 g dry weight)
Sediment/water ratio		1:10 sediment:water
Application rates (mg a.i./L)		Nominal: 0.067 mg a.i./L  Measured: [phenyl-UL- <sup>14</sup> C]prothioconazole: 0.0656 mg a.i./L  [triazole-3,5- <sup>14</sup> C]prothioconazole: 0.0681 mg a.i./L
Control conditions, if used (present differences from other treatments, i.e., sterile/non-sterile, experimental conditions)		Controls were used for respiratory activity of microflora in sediment samples.
No. of replications	Control, if used:	1 vessel per respiratory activity of microflora determination sampling interval, per label, per system
	Treatments:	1 vessel per sampling interval, per label, per system

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Test apparatus (Type/material/volume)		Glass vessel (diameter: ~10.5 cm; volume: ~1 L)  A stirrer (with sealed-in magnet) suspended from the rubber coupling is moved by a rotating magnet which is fitted into a table-like case below the incubation vessel (Technique, Type: MCS-104 L). This stirrer agitates the surface water without disturbing the sediment.	
Details of traps for CO <sub>2</sub> and volatile organics, if any		Oxygen permeable trap containing soda lime and polyurethane foam to trap CO <sub>2</sub> and organic volatiles, respectively.	
If no traps were used, is the system closed/open		n/a	
Identity and concentration of co-solvent		acetonitrile, 0.02%	
Test material application	Volume of the test solution used/treatment:	[phenyl-UL- <sup>14</sup> C]prothioconazole: 1000 µL [triazole-3,5- <sup>14</sup> C]prothioconazole: 1020 µL	
	Application method (eg: mixed/not mixed etc.)	Application solution was dispensed into the vessels containing a total volume of 450 mL water. Agitation of the sediment had to be prevented to avoid possible adsorption effects.	
Any indication of the test material adsorbing to the walls of the test apparatus		No	
Respiratory activity of microflora in control sediment samples (mg CO <sub>2</sub> /hr/kg sediment)		Initial	Final
		Honniger Weiher pond: 12 pH (KCl) = 5.4	Honniger Weiher pond: 8 pH (KCl) = 5.3
		Anglerweiher lake: 6 pH (KCl) = 7.9	Anglerweiher lake: 2 pH (KCl) = 8.4
Respiratory activity of microflora in treated sediment samples (mg CO <sub>2</sub> /hr/kg sediment)		Initial	Final
		Honniger Weiher pond: 12 pH (KCl) = 5.4	Honniger Weiher pond: 11 pH (KCl) = 5.4
		Anglerweiher lake: 6 pH (KCl) = 7.9	Anglerweiher lake: 2 pH (KCl) = 8.2
Experimental conditions:	Temperature (°C)	20±1	
	Continuous darkness (Yes/No)	yes	
Other details, if any			

Data were obtained from p. 16-19, Appendices 5, 6, and 13; pp. 41, 42, and 49-50.

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**3. Aerobic conditions:** Aerobic conditions were maintained with the use of a stirrer inside the test vessels, which gently stirred oxygen into the water phase (p. 19).

**4. Supplementary experiments:** No supplementary experiments were described.

**5. Sampling:**

Table 6: Sampling details.

Criteria	Details
Sampling intervals	0, 1, 3, 7, 14, 29, 59 and 121 days
Sampling method	The water phase was decanted into a centrifuge tube containing 0.4 g L-cysteinhydrochlorid- monohydrate to prevent chemical breakdown of the parent compound during processing. The tube was centrifuged for 15 min at >3000 g. After centrifugation, the supernatant water was filtered, the volume was measured and decanted into a glass bottle. An aliquot (50 mL) of the supernatant water was drained off into a 100 mL Erlenmeyer flask containing 1 mL 1 M NaOH for later processing (determination of dissolved <sup>14</sup> CO <sub>2</sub> and/or <sup>14</sup> C-carbonates). The solids remaining in the centrifuge tube after decanting the water were transferred to the sediment for further analysis.
Method of collection of CO <sub>2</sub> and volatile organic compounds	Before processing of the samples, volatile compounds were purged into the trap attachment by means of pressurised air (about 10 min, 230 cm <sup>3</sup> /min).
Sampling intervals/times for: sterility check, if sterile controls are used: aerobicity:	No sterile controls were used.
Sample storage before analysis	Samples were analyzed immediately.
Other observations, if any	

Data were obtained from p. 16-19.

**C. ANALYTICAL METHODS:**

**Separation of the sediment and water:** The water phase was decanted into a centrifuge tube containing 0.4 g L-cysteinhydrochlorid-monohydrate to prevent chemical breakdown of the parent compound during processing. The tube was centrifuged for 15 min at >3000 g. After centrifugation, the supernatant water was filtered, the volume was measured and decanted into a glass bottle. An aliquot (50 mL) of the supernatant water was drained off into a 100 mL

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Erlenmeyer flask containing 1 mL 1 M NaOH for later processing (determination of dissolved  $^{14}\text{CO}_2$  and/or  $^{14}\text{C}$ -carbonates). The solids remaining in the centrifuge tube after decanting the water were transferred to the sediment for further analysis (p. 19-20).

### **Extraction/clean up/concentration methods for water and sediment samples:**

The total amount of sediment was extracted 3 times at room temperature with acetonitrile/water (9:1, v/v) + L-cysteinhydrochlorid-monohydrate at 1000 mg/L extraction solvent on a mechanical shaker immediately after separation of the water phase. An aliquot of the first solvent was used for rinsing the test vessel and transferring the total sediment sample into the centrifuge vessel. After each extraction cycle, the slurry was centrifuged (>5000 g) for about 15 minutes. The clear supernatant was decanted through a folded paper filter. All sediment extracts were combined and the resulting volume was determined. The filter paper were completely combusted for radioactivity measurement. The extracted sediment was dried and homogenized (p. 19-20).

After the organic extraction mentioned above, the residues remaining in the sediment were extracted using a Soxtec apparatus. A subsample of 10 g air dried sediment was mixed with 5 g sea sand and boiled 1 h followed by rinsing for 1 h (solvent: acetonitrile/water (80:20) + L-cysteinhydrochlorid-monohydrate (1000 mg/L extraction solvent); temperature of oil bath: 180 °C) (p. 20).

The organic extracts and hot extracts of sediment samples were regarded as extracted radioactivity.

After the hot extraction, the remaining sediment samples from the pond system at all sampling intervals, and from the lake system at day 121 only, were extracted again under exhaustive extraction conditions using the Soxtec apparatus. The hot-extracted sediment was boiled under reflux for 1 h with acetone/conc. HCl (99:1) followed by rinsing for 1 h (temperature of oil bath: 150 °C) (p. 20).

The radioactivity in solution was measured by LSC (p. 20).

**Total  $^{14}\text{C}$  measurement:** Total  $^{14}\text{C}$  residues were determined by summing the concentrations of residues measured in the water, sediment extracts, extracted sediment, and volatile trapping solutions.

**Determination of non-extractable residues:** The amount of non-extracted radioactivity in sediment samples was determined by combustion of 3 aliquots (p. 26).

**Identification and quantification of parent compound and transformation products:** Identification and quantification of prothioconazole and its transformation products in subsamples of the water as well as the organic and hot extracts of the sediments was done

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directly, without concentration, using TLC co-chromatography with reference compounds. Confirmation of the quantitative results was made by other TLC methods (p. 21-25).

Aliquots of extracts/solutions were spotted on RP18, 0.25 mm, F254 S Merck plates as bands using an automatic plate spotter (Linomat IV, Camag). The following solvent system was used: acetonitrile/water/methanol/acetic acid (70:25:5:1, v/v, including 1000 mg/L ionol\*) [\* ionol: 2,6-di-tert-butyl-4-methylphenol]. Representative solutions were cochromatographically analyzed by spotting authentic reference compounds onto the plates overlapping with the radioactive bands. The distribution of radioactive zones on the plates was measured using a Bio-Imaging Analyzer (BAS 2000, Fuji Co.) and quantified with the software package TINA (Raytest). Non- radiolabelled reference compounds on the plates were visualized in the UV-cabinet at a wavelength of 254 nm. Aliquots of the exhaustive sediment extraction could not be evaluated quantitatively by TLC owing to strong smearing of the radioactivity on the TLC plates due to the high matrix load (p. 21-25).

Transformation products were identified, isolated and/or purified by HPLC analysis under one of the three chromatography methods (pp. 24-15): Method ZE04LC01: HP 1090A (Hewlett Packard) coupled to a Ramona-92 radioactivity monitor with a solid scintillation flow-through cell (Raytest); LiChrospher 100 RP18 column (5µm, 250 x 4 mm); gradient mobile phase (A) Milli-Q-water/ phosphoric acid (1000/1) or (B) acetonitrile [percent A:B at 1 min. 100:0, 10 min. 60:40, 35 min. 40:60, 40 min. 0:100, 45 min. 0:100, 50 min. 100:0], flow rate 1 mL/minute, oven temperature: 40°C; Method 0899OI02.M: HP 1090 (Hewlett Packard) coupled to a Ramona-90 radioactivity monitor with a solid scintillation flow-through cell (Raytest); LiChrospher 100 RP18 column (5µm, 250 x 4 mm); gradient mobile phase (A) water including 0.1% trifluoroacetic acid (TFA) or (B) acetonitrile including 0.1% TFA [percent A:B at 1 min. 100:0, 10 min. 60:40, 35 min. 40:60, 40 min. 0:100, 45 min. 0:100, 50 min. 100:0], flow rate 1 mL/minute, oven temperature: 40°C, wavelength: 210 nm (DAD); Method GRAPHI3: HP 1050 (Hewlett Packard) coupled to a Ramona-90 radioactivity monitor with a solid scintillation flow-through cell (Raytest); Hypersil column (125 x 4 mm, 5µm Hypercarb; gradient mobile phase (A) Milli-Q-water or (B) acetonitrile [percent A:B at 0 min. 100:0, 30 min. 0:100, 35 min. 100:0], flow rate 1 mL/minute, oven temperature: 26.7 °C, wavelength: 210 nm (DAD) (p. 21-25).

Transformation products M6a and M8 were identified following isolation and purification by fullscan Liquid Chromatography -Mass Spectrometry (LC-MS) and LC-MS/MS (p. 21-25).

### Detection limits (LOD, LOQ) for the parent compound and for transformation products:

The LOQ in the sediment extracts and water phase was about 0.1% of the applied radioactivity (AR) for a single peak (p. 23).



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## II. RESULTS AND DISCUSSION:

### A. TEST CONDITIONS:

Oxygen content in the water was reported to be 73 to 93% oxygen saturation for the Honniger Weiher pond system (with one replicate at 54% on day 7) and 85 to 95% for the Anglerweiher lake system (p. 51).

The pH in the surface water ranged from 4.4 to 7.6 in the Honniger Weiher pond system and from 7.7 to 8.4 in the Anglerweiher lake system. The water layers were moderately oxidizing to moderately reducing throughout the study; sediment layers were moderately oxidizing to reducing throughout the study. The redox potential of the Honniger Weiher pond system ranged from +165 to +360 mV in the water and from -100 to +150 mV in the sediment. The redox potential of the Anglerweiher lake system, ranged from +126 to +231 mV in the water and from -127 to +261 mV in the sediment (Appendices 14-15; p. 51-52).

The determinations of the microbial activity of the sediments indicated that the systems were biologically active during the entire period of the test (see Table 5). The observed reduction of the microbial activity in the course of the experiment is characteristic of a laboratory experiment, according to the study authors. Similar microbial activity determinations were observed between samples treated and not treated with prothioconazole in both systems. An effect of the test substance on microbial activity was not apparent (p. 28; Appendix 9, p. 45).

### B. MATERIAL BALANCE:

In the Honniger Weiher pond system, the mean total recovery of the AR in the water was  $18.3 \pm 22.5\%$  and  $18.9 \pm 21.5\%$  for samples treated with [phenyl-UL- $^{14}\text{C}$ ] and [triazole-3,5- $^{14}\text{C}$ ] prothioconazole, respectively. The corresponding mean total recovery of AR in the sediment was  $77.1 \pm 21.3\%$  and  $79.1 \pm 21.3\%$ . From day 0 to the end of the study (day 121), recovery of radioactive material in the water of the Honniger Weiher system decreased from 68.0% to 1.5% of the applied and from 67.3% to 4.7% of the applied, respectively, for the [phenyl-UL- $^{14}\text{C}$ ] and [3,5-triazole- $^{14}\text{C}$ ] labels. Recovery of radioactive material in the sediment of the Honniger Weiher system increased from 30.7% of the applied at day 0 to a maximum of 92.9% of the applied at day 14 and decreased to 81.1% by study termination (day 121) for the [phenyl-UL- $^{14}\text{C}$ ] label and increased from 33.3% of the applied at day 0 to 94.2% of the applied at day 14 and ranged from 89.8-97.3% of the applied for the remainder of the study for the [3,5-triazole- $^{14}\text{C}$ ] label.

The recovery of radiolabelled material in the whole system averaged  $98.0 \pm 2.2\%$  of the AR in the samples treated with [phenyl-UL- $^{14}\text{C}$ ]prothioconazole, and  $98.2 \pm 3.3\%$  of the AR in the samples treated with [triazole-3,5- $^{14}\text{C}$ ]prothioconazole. No pattern of decline in material balances were observed during the 121 day study.

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In the Anglerweiher lake system, the mean total recovery of AR in the water was  $41.9 \pm 20.4\%$  and  $52.8 \pm 14.4\%$  for samples treated with [phenyl-UL- $^{14}\text{C}$ ] and [triazole-3,5- $^{14}\text{C}$ ] prothioconazole, respectively. The corresponding mean total recovery of AR in the sediment was  $51.5 \pm 13.1\%$  and  $48.6 \pm 14.8\%$ . Recovery of radioactive material in the water of the Anglerweiher system decreased from 79.4% to 13.8% of the applied from day 0 to the end of the study (day 121) for the [phenyl-UL- $^{14}\text{C}$ ] label and decreased from 82.9% of the applied to a minimum of 38.7% of the applied at day 29 and increased to 55.7% of the applied by study termination (day 121) for the [3,5-triazole- $^{14}\text{C}$ ] label. Recovery of radioactive material in the sediment of the Anglerweiher system increased from 23.0% of the applied at day 0 to 50.2% of the applied at day 3 and ranged from 50.9-63.4% of the applied for the remainder of the study for the [phenyl-UL- $^{14}\text{C}$ ] label, and increased from 18.5% of the applied at day 0 to a maximum of 61.8% of the applied at day 7 and decreased to 43.0% of the applied by study termination (day 121) for the [3,5-triazole- $^{14}\text{C}$ ] label.

The recovery of radiolabelled material in the whole system averaged  $99.5 \pm 3.1\%$  of the AR in samples treated with [phenyl-UL- $^{14}\text{C}$ ]prothioconazole, and  $101.7 \pm 1.4\%$  of the AR in samples treated with [triazole-3,5- $^{14}\text{C}$ ]prothioconazole. No pattern of decline in material balances were observed during the 121 day study.

Following application of [ $^{14}\text{C}$ ] prothioconazole to the water layer, [ $^{14}\text{C}$ ] residues associated with the sediment in increasing proportions over the course of the study. In the Honniger Weiher system, the water-sediment distribution ratios were ca. 2:1 at time 0, 0.1:1 at 7 days, and from 0.02:1 to 0.07:1 at 14 through 121 days (study termination) for both labels. In the Anglerweiher system, the water-sediment distribution ratios were ca. 4:1 at time 0, 1:1 at 3 days, and from 0.51:1 to 0.77:1 at 7 through 29 days (study termination) for both labels. By study termination, however, the proportion of [ $^{14}\text{C}$ ] residues associated with the sediment increased to a water-sediment distribution ratio of 0.27:1 for the [phenyl-UL- $^{14}\text{C}$ ] label but decreased to a water-sediment distribution ratio of 1.30:1 for the [3,5-triazole- $^{14}\text{C}$ ] label.

Table 7: Biotransformation of [phenyl-UL- $^{14}\text{C}$ ]prothioconazole, expressed as percentage of applied radioactivity (n=1), in the water/loam Hönniger Weiher pond system under aerobic conditions.

Compound		Sampling times (days)							
		0	1	3	7	14	29	59	121
Parent compound	water	52.7	19.1	12.7	4.9	2.1	0.8	0.4	n.d.
	sediment	7.2	23.4	21.7	21	23	16	7.5	9.5
	total system	59.9	42.4	34.4	259	25.1	16.8	7.8	9.5
JAU6476-S-methyl	water	n.d.	0.6	0.8	0.4	0.2	0.1	n.d.	n.d.

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	sediment	n.d.	1.8	2.9	3.7	4	4.6	5	3.1
	total system	n.d.	2.4	3.7	4.1	4.3	4.7	5	3.1
JAU6476-desthio	water	13.9	9.9	6	3.7	3	1.3	1.7	n.d.
	sediment	5.5	11.1	16	14.7	15.8	17.1	21.9	11.1
	total system	19.4	21	22	18.4	18.7	18.5	23.6	11.1
JAU6476-triazolinone	water	0.2	0.7	1.1	1	1	1.5	0.7	n.d.
	sediment	n.d.	0.6	1.1	2.1	3	4.6	4.8	3.6
	total system	0.2	1.4	2.3	3.1	3.9	6	5.5	3.6
M3	water	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
	sediment	n.d.	0.3	0.1	0.2	0.2	0.3	0.5	n.d.
M3a	water	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
	sediment	n.d.	n.d.	n.d.	n.d.	n.d.	0.3	n.d.	n.d.
M5	water	n.d.	0.3	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
	sediment	n.d.	0.3	0.4	0.5	0.4	0.4	0.4	0.3
M12	water	n.d.	n.d.	n.d.	n.d.	n.d.	0.1	n.d.	n.d.
	sediment	n.d.	n.d.	n.d.	n.d.	0.4	0.9	1.1	1.8
M6	water	n.d.	n.d.	n.d.	n.d.	0.2	n.d.	n.d.	n.d.
	sediment	n.d.	n.d.	n.d.	0.3	n.d.	n.d.	n.d.	n.d.
M13	water	0.6	n.d.	0.3	0.1	0.1	n.d.	0.6	n.d.
	sediment	0.1	n.d.	0.3	0.1	n.d.	n.d.	0.2	n.d.
Diffuse radioactivity (unidentified)	water	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	1.5
	sediment	n.d.	n.d.	0.2	n.d.	n.d.	0.3	0.9	n.d.
Origin (unidentified)	water	0.6	0.5	0.5	0.3	0.1	<0.1	n.d.	n.d.
	sediment	0.1	0.7	0.8	0.7	0.8	0.6	0.9	0.8
Total CO <sub>2</sub>	total system	n.m.	<0.1	0.1	0.3	0.5	0.9	4.1	14.7
Total volatile organics	total system	n.m.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total extracted	water <sup>1</sup>	68	31.2	21.4	10.5	6.7	3.9	3.4	1.5
	sediment <sup>2</sup>	13	38.1	43.5	43.3	47.7	45.2	43.2	30.3

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	total system	80.9	69.3	64.9	53.8	54.3	49.1	46.7	31.8
Exhaustive extract <sup>3</sup>	sediment	9.5	7.9	8.4	8.1	6.3	5.9	4.3	5.6
Non-extractable residues	sediment	8.2	19.6	21.1	36.5	38.9	40.4	46.4	45.3
Total % recovery	water	68	31.1	21.4	10.5	6.6	3.9	3.4	1.5
	sediment	30.7	65.6	73	87.9	92.9	91.4	94	81.1
	total system	98.6	96.7	94.5	98.7	100	96.3	102	97.3

n.d. = not detected; n.m. = not measured.

<sup>1</sup>Total extracted radioactivity in aqueous layer

<sup>2</sup>Radioactivity from organic and hot extracts of sediment layer.

<sup>3</sup>Not identified due to high matrix content.

Table 8: Biotransformation of [triazole-3,5-<sup>14</sup>C]prothioconazole, expressed as percentage of applied radioactivity (n=1), in the water/loam Hönniger Weiher pond system under aerobic conditions.

Compound		Sampling times (days)							
		0	1	3	7	14	29	59	121
Parent compound	water	59.8	18.3	12.5	7.1	1.9	2	0.1	n.d.
	sediment	12.6	22.6	14.4	20.9	18.4	15.3	14.7	6.8
	total system	72.4	40.9	26.9	28	20.3	17.3	14.8	6.8
JAU6476-S-methyl	water	n.d.	0.8	0.7	0.5	0.3	0.1	n.d.	n.d.
	sediment	0.1	2.1	2.7	4	3.9	4.8	4.1	2.9
	total system	0.1	2.9	3.4	4.5	4.2	4.9	4.1	2.9
JAU6476-desthio	water	7.3	9.2	4.9	4.3	3.3	1.6	0.7	n.d.
	sediment	4.8	9.5	14.9	14	16.8	16.9	17.7	9.5
	total system	12.1	18.7	19.8	18.3	20.1	18.5	18.4	9.5
JAU6476-triazolinone	water	n.d.	0.8	1	1	0.9	1.2	0.6	n.d.
	sediment	n.d.	0.6	1	2.1	2.8	4.3	6.1	3.1
	total system	n.d.	1.4	2	3.1	3.7	5.5	6.7	3.1
JAU6476-triazolyketone	water	n.d.	n.d.	n.d.	n.d.	n.d.	0.3	n.d.	n.d.
	sediment	n.d.	n.d.	n.d.	n.d.	0.4	1.3	2.1	5.8
	total system	n.d.	n.d.	n.d.	n.d.	0.4	1.6	2.1	5.8

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1,2,4-triazole	water	n.d.	0.2	n.d.	n.d.	n.d.	n.d.	0.8	n.d.
	sediment	0.1	0.1	0.2	0.1	0.2	0.4	3.9	6.1
	total system	0.1	0.3	0.2	0.1	0.2	0.4	4.7	6.1
M3	water	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
	sediment	0.3	1	1.3	1.1	0.4	0.4	0.3	n.d.
M3a	water	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
	sediment	n.d.	n.d.	n.d.	n.d.	1.5	0.3	n.d.	n.d.
M5	water	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
	sediment	0.1	0.4	0.3	0.5	0.6	0.6	1	0.5
M6	water	n.d.	n.d.	n.d.	n.d.	0.4	0.5	1.5	n.d.
	sediment	n.d.	n.d.	n.d.	0.2	0.3	0.2	0.2	0.4
Diffuse radioactivity (unidentified)	water	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	4.7
	sediment	0.3	0.6	0.7	n.d.	n.d.	0.7	0.7	3.4
Origin (unidentified)	water	0.2	0.4	0.4	0.5	0.1	<0.1	n.d.	n.d.
	sediment	0.3	0.9	0.6	0.7	0.9	0.6	1.2	0.8
Total CO <sub>2</sub>	total system	n.m.	<0.1	<0.1	<0.1	<0.1	0.1	0.2	1.9
Total volatile organics	total system	n.m.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total extracted	water <sup>1</sup>	67.3	29.7	19.5	13.4	6.9	5.7	3.7	4.7
	sediment <sup>2</sup>	18.6	37.8	35.1	43.6	46.2	45.8	52	39.3
	total system	85.9	67.5	54.6	57	53.1	51.5	55.7	44
Exhaustive extract <sup>3</sup>	sediment	6.6	9.6	14.2	7	8.6	5.6	7.5	5.9
Non-extractable residues	sediment	8.1	19.9	22.9	36.0	39.4	38.4	37.8	46.7
Total % recovery	water	67.3	29.7	19.6	13.3	6.8	5.8	3.8	4.7
	sediment	33.3	67.4	72.2	86.7	94.2	89.6	97.4	92
	total system	101	97.1	91.8	100	101	95.4	101	98.6

n.d. = not detected; n.m. = not measured.

<sup>1</sup>Total extracted radioactivity in aqueous layer

<sup>2</sup>Radioactivity from organic and hot extracts of sediment layer.

<sup>3</sup>Not identified due to high matrix content.

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Table 9: Biotransformation of [phenyl-UL-<sup>14</sup>C]prothioconazole, expressed as percentage of applied radioactivity (n=1), in the water/loamy sand Anglerweiher lake system under aerobic conditions.

Compound		Sampling times (days)							
		0	1	3	7	14	29	59	121
Parent compound	water	68.7	32.9	9.9	1.7	0.8	0.4	0.2	0.4
	sediment	17	21	15.3	11.8	8	5.8	5.1	3.4
	total system	85.7	53.9	25.2	13.5	8.8	6.2	5.3	3.8
JAU6476-S-methyl	water	n.d.	1.5	2.4	2.5	1.4	0.8	0.1	n.d.
	sediment	0.2	4.4	5.5	6.4	6.9	6.7	4.1	2
	total system	0.2	5.9	7.9	8.9	8.3	7.5	4.2	2
JAU6476-desthio	water	9.3	18.3	31.2	32.3	26.3	21.4	7.2	1.2
	sediment	3.9	11.7	16.8	22.3	26.9	25	16.4	8.2
	total system	13.2	30	48	54.6	53.2	46.4	23.6	9.4
JAU6476-triazolinone	water	0.3	n.d.	0.3	0.3	0.5	0.3	1.6	1.3
	sediment	n.d.	n.d.	n.d.	0.2	n.d.	0.3	0.3	2.3
	total system	0.3	n.d.	0.3	0.5	0.5	0.6	1.9	3.6
M3	water	n.d.	n.d.	0.1	n.d.	n.d.	0.4	1.3	1
	sediment	n.d.	0.2	0.6	1.1	1.6	2.6	2.4	0.8
M4a	water	n.d.	n.d.	n.d.	n.d.	0.3	n.d.	n.d.	0.2
	sediment	n.d.	n.d.	n.d.	n.d.	n.d.	0.1	0.5	n.d.
M5	water	n.d.	0.5	1.5	2.1	2.7	2.5	3.1	2.4
	sediment	n.d.	n.d.	0.2	0.6	0.9	1.3	1.7	n.d.
M6	water	n.d.	0.3	1	1.5	1.7	2.7	5.1	4.9
	sediment	n.d.	0.2	n.d.	n.d.	n.d.	0.4	0.6	1.5
M13	water	0.7	0.6	1.5	1.7	2.3	2	2.4	1.8
	sediment	0.1	0.2	0.4	0.3	0.4	0.3	0.3	n.d.
M9	water	n.d.	0.2	0.8	0.8	1	0.9	1.7	n.d.
	sediment	n.d.	n.d.	0.2	0.1	n.d.	n.d.	n.d.	n.d.

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M10	water	n.d.	0.4	1.1	1.2	1.2	0.8	n.d.	n.d.
	sediment	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Diffuse radioactivity (unidentified)	water	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.4
	sediment	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Origin (unidentified)	water	0.4	0.2	0.3	0.1	n.d.	n.d.	0.1	0.2
	sediment	0.3	0.8	0.8	0.8	0.8	0.9	1.2	1.4
Total CO <sub>2</sub>	total system	n.m.	<0.1	0.1	0.4	1.5	4.4	13.3	29
Total volatile organics	total system	n.m.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total extracted	water <sup>1</sup>	79.4	54.9	50.1	44.2	38.2	32.2	22.7	13.8
	sediment <sup>2</sup>	21.5	38.5	39.8	43.6	45.5	43.4	32.6	19.6
	total system	101	93.4	89.9	87.8	83.7	75.6	55.3	33.4
Exhaustive extract <sup>3</sup>	sediment	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.	1
Non-extractable residues	sediment	1.5	7.3	10.4	13.7	16.4	20	27	30.3
Total % recovery	water	79.3	54.8	50.1	44	38.3	32.2	22.7	13.8
	sediment	22.9	45.8	50.3	57.3	61.9	63.2	59.7	50.9
	total system	102	101	100	101.9	102	99.8	95.7	93.7

n.d. = not detected; n.m. = not measured.

<sup>1</sup>Total extracted radioactivity in aqueous layer

<sup>2</sup>Radioactivity from organic and hot extracts of sediment layer.

<sup>3</sup>Not identified due to high matrix content.

Table 10: Biotransformation of [triazole-3,5-<sup>14</sup>C]prothioconazole, expressed as percentage of applied radioactivity (n=1), in the water/loamy sand Anglerweiher lake system under aerobic conditions.

Compound		Sampling times (days)							
		0	1	3	7	14	29	59	121
Parent compound	water	76.3	39.2	11	1.7	0.9	0.7	0.4	n.d.
	sediment	13.6	18.3	14.7	10.4	7.7	6.9	4.4	3.3
	total system	89.9	57.5	25.7	12.1	8.6	7.6	4.8	3.3
JAU6476-S-methyl	water	n.d.	1.5	2.7	3.1	1.3	1.2	0.2	n.d.

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	sediment	0.1	3.7	5.3	9.6	6.4	7.8	3.6	1.9
	total system	0.1	5.2	8	12.7	7.7	9	3.8	1.9
JAU6476-desthio	water	5.1	18.9	31.9	30	26.9	20.3	7.6	1.1
	sediment	3.1	9.8	16.8	24.2	26.9	24.5	14	7.1
	total system	8.2	28.7	48.7	54.2	53.8	44.8	21.6	8.2
JAU6476-triazolinone	water	0.3	n.d.	0.3	0.3	0.5	0.3	2.2	1.6
	sediment	n.d.	n.d.	n.d.	0.4	0.2	1.5	n.d.	n.d.
	total system	0.3	n.d.	0.3	0.7	0.7	1.8	2.2	1.6
JAU6476-triazolyketone	water	n.d.	n.d.	n.d.	0.7	2.4	2.2	8	5.6
	sediment	n.d.	n.d.	n.d.	n.d.	0.3	0.4	1.1	0.3
	total system	n.d.	n.d.	n.d.	0.7	2.7	2.6	9.1	5.9
1,2,4-triazole	water	n.d.	0.5	1.5	1.7	3.3	3.5	12.6	37.2
	sediment	0.1	0.2	0.4	0.1	0.6	0.4	1.9	4.6
	total system	0.1	0.7	1.9	1.8	3.9	3.9	14.5	41.8
M3	water	n.d.	n.d.	n.d.	n.d.	n.d.	0.4	1.2	1.1
	sediment	n.d.	0.2	0.8	1.1	1.7	2.2	3	1.1
M5	water	0.4	0.5	1.5	1.4	3	3.4	3.6	2.9
	sediment	n.d.	n.d.	0.2	0.2	1	0.5	2.1	1.5
M6	water	0.4	0.3	1.1	0.8	2.5	4.6	7.7	4.6
	sediment	0.2	n.d.	n.d.	0.3	0.3	0.2	0.4	0.9
M9	water	n.d.	0.5	2	0.6	1.1	0.8	2.9	n.d.
	sediment	n.d.	0.1	0.1	0.1	n.d.	n.d.	n.d.	n.d.
Other minor transformation products	water	n.d.	n.d.	n.d.	0.9	1.6	1.3	n.d.	n.d.
	sediment	n.d.	n.d.	n.d.	<0.1	n.d.	n.d.	0.7	n.d.
Diffuse radioactivity (unidentified)	water	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	<0.1	1.2
	sediment	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	2.4	1.9
Origin (unidentified)	water	0.4	0.1	0.4	0.2	n.d.	n.d.	0.1	0.4
	sediment	0.1	0.7	0.7	0.8	0.6	0.8	0.6	1.5



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Total CO <sub>2</sub>	total system	n.m.	<0.1	<0.1	0.1	0.1	0.1	0.3	1.9
Total volatile organics	total system	n.m.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total extracted	water <sup>1</sup>	82.9	61.5	52.4	41.4	43.5	38.7	46.5	55.7
	sediment <sup>2</sup>	17.2	33	39	47.2	45.7	45.2	34.2	24.1
	total system	100	94.5	81.4	88.6	89.2	83.9	80.7	79.8
Exhaustive extract <sup>3</sup>	sediment	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.	3.6
Non-extractable residues	sediment	1.3	6.7	9.6	14.6	14.9	16.3	20.9	15.3
Total % recovery	water	82.8	61.5	52.3	41.4	43.4	38.6	46.6	55.7
	sediment	18.5	39.7	48.5	61.7	60.6	61.5	55.1	43
	total system	101	101	101	103	104	100	102	101

n.d. = not detected; n.m. = not measured.

<sup>1</sup>Total extracted radioactivity in aqueous layer

<sup>2</sup>Radioactivity from organic and hot extracts of sediment layer.

<sup>3</sup>Not identified due to high matrix content.

**C. TRANSFORMATION OF PARENT COMPOUND:**

In the Honniger Weiher system, [<sup>14</sup>C]prothioconazole concentrations in the water decreased from 52.7% and 59.8% of the applied at day 0 to <MDL at study termination for the [phenyl-UL-<sup>14</sup>C] and [3,5-triazole-<sup>14</sup>C] labels, respectively. In the Anglerweiher system, [<sup>14</sup>C]prothioconazole concentrations in the water decreased from 68.7% and 76.3% of the applied at day 0 to 0.4% of the applied and <MDL at study termination for the [phenyl-UL-<sup>14</sup>C] and [3,5-triazole-<sup>14</sup>C] labels, respectively. In the Honniger Weiher system, [<sup>14</sup>C]prothioconazole concentrations in the sediment increased from 7.2% and 12.6% of the applied at day 0 to ranges of 7.5-23.4% and 14.4-22.6% of the applied between 1 and 59 days, and were 9.5% and 6.8% of the applied at study termination for the [phenyl-UL-<sup>14</sup>C] and [3,5-triazole-<sup>14</sup>C] labels, respectively. In the Anglerweiher system, [<sup>14</sup>C]prothioconazole concentrations in the sediment increased from 17.0% and 13.6% of the applied at day 0 to a maximum of 21.0% and 18.3% of the applied at day 1, and decreased to 3.4% and 3.3% of the applied at study termination for the [phenyl-UL-<sup>14</sup>C] and [3,5-triazole-<sup>14</sup>C] labels, respectively. In the Honniger Weiher system, [<sup>14</sup>C]prothioconazole concentrations in the total system decreased from 59.9% and 72.4% of the applied at day 0 to 9.5% and 6.8% of the applied at study termination for the [phenyl-UL-<sup>14</sup>C] and [3,5-triazole-<sup>14</sup>C] labels, respectively. In the Anglerweiher system, [<sup>14</sup>C]prothioconazole concentrations in the total system decreased from 85.7% and 89.9% of the applied at day 0 to 3.8% and 3.3% of the applied at study termination for the [phenyl-UL-<sup>14</sup>C] and [3,5-triazole-<sup>14</sup>C] labels, respectively.

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**HALF-LIVES:** The dissipation of prothioconazole from water, sediment and from the total system generally did not follow first-order kinetics with one degradation rate for every sampling interval, but, rather, an initial rapid transformation phase was followed by a second slower transformation phase. The half-lives and corresponding  $t_{9/10}$  were calculated by the PMRA reviewer using the following: linear regression of natural log-transformed data ( $\ln [A] = -kt + \ln [A]_0$ ) when the transformation appeared to follow simple first-order kinetics, i.e., if the log-linear model was a good fit. If the log-linear model was not a good fit, then a simple first order non-linear regression ( $y = a \cdot \exp(-b \cdot x)$ ) was performed on non-transformed data to calculate the half-life. If neither of these models were a good fit to the data, a multicompartment first order non-linear regression model ( $y = a \cdot \exp(-b \cdot x) + c \cdot \exp(-d \cdot x)$ ) was performed on non-transformed data, and a  $DT_{50}$  and corresponding  $DT_{90}$  were reported. An observed  $DT_{50}$  was also estimated through linear interpolation of the dissipation curve, for comparison purposes. The dissipation in the sediment was calculated from the time the maximum concentration was detected, by excluding day 0-1 data in the Hönniger Weiher sediment and excluding day 0 data for the Anglerweiher sediment. Water and total system half-lives of [phenyl-UL- $^{14}C$ ] and [triazole-3,5- $^{14}C$ ]prothioconazole were calculated by EPA via linear regression on log-transformed data using all data points on all datasets.

**Table 11a: DT50 values for [phenyl-UL- $^{14}C$ ] and [triazole-3,5- $^{14}C$ ]prothioconazole in aerobic water/sediment systems, calculated by PMRA-reviewer.**

System/ radiolabel	First order multi-compartment model (unless otherwise stated)			Observed $DT_{50}$ from curvilinear interppolation (days)	Observed $DT_{90}$ from curvilinear interppolation (days)
	$DT_{50}$ and $DT_{90}$ (or $t_{1/2}$ or $t_{9/10}$ ) (days)	Non-linear regression equation $y = a \cdot \exp(-b \cdot x) + c \cdot \exp(-d \cdot x)$ (unless otherwise stated)	$r^2$		
Hönniger Weiher pond system - water					
Phenyl label	$t_{1/2} = 0.9$ $t_{9/10} = 3.1$	$a = 96.7172$ $b = 0.7375$ (single, 2 paramater non-linear model) Curve overestimates the dissipation.	0.944	0.6	6.6
Triazole label	$t_{1/2} = 0.7$ $t_{9/10} = 2.4$	$a = 98.1612$ $b = 0.9572$ (single, 2 paramater non-linear model) Curve overestimates the dissipation.	0.934	0.6	8
Hönniger Weiher pond system - sediment					

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Phenyl label	$t_{1/2} = 58.9$ $t_{9-10} = 198.9$	$a = 98.4671$ $b = 0.0115$ (single, 2 parameter non-linear model)	0.798	39	>120
Triazole label	$t_{1-2} = 83.5$ $t_{9-10} = 277.5$	$y = -0.0083x + 2.9937$ (linear first order model)	0.831	86	>120
Hönniger Weiher pond system - whole system					
Phenyl label	DT50 = 3.9 DT90 = 97.1	$a = 49.4623$ $b = 0.6896$ $c = 49.6099$ $d = 0.0165$	0.954	4.5	>121
Triazole label	DT50 = 1.3 DT90 = 111.4	$a = 62.7893$ $b = 1.1659$ $c = 37.2362$ $d = 0.0118$	0.987	1.4	119
Anglerweiher lake system - water					
Phenyl label	$t_{1-2} = 1.0$ $t_{9-10} = 3.3$	$a = 99.4112$ $b = 0.6950$ (single, 2 parameter non-linear model)	0.998	0.9	3.8
Triazole label	$t_{1-2} = 1.1$ $t_{9-10} = 3.5$	$a = 99.8176$ $b = 0.6544$ (single, 2 parameter non-linear model)	0.999	1.1	3.7
Anglerweiher lake system - sediment					
Phenyl label	DT50 = 6.9 DT90 = 192.7	$a = 62.5932$ $b = 0.1935$ $c = 35.0031$ $d = 0.0065$	0.987	8	>120
Triazole label	DT50 = 8.4 DT90 = 108.7	$a = 56.2855$ $b = 0.2186$ $c = 44.0217$ $d = 0.0082$	0.992	8	>120
Anglerweiher lake system - whole system					
Phenyl label	DT50 = 1.6 DT90 = 20.5	$a = 87.0262$ $b = 0.5392$ $c = 12.7679$ $d = 0.0119$	0.998	1.5	14.5

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Triazole label	DT50 =1.6 DT90 =13.4	a = 88.6365 b = 0.5285 c = 11.4897 d = 0.0109	1	1.5	12
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**Table 11b: Half-life values for [phenyl-UL-<sup>14</sup>C] and [triazole-3,5-<sup>14</sup>C]prothioconazole in aerobic water/sediment systems, calculated by EPA-reviewer.**

System/ Radiolabel	First order half-life, linear regression on log-transformed data <sup>1</sup> $\ln [A] = - kt + \ln [A]_0$				Observed DT <sub>50</sub> (days)
	t <sub>1/2</sub> (days)	k	ln [A] <sub>0</sub>	r <sup>2</sup>	
Hönniger Weiher pond system - Aqueous					
Phenyl label	15.5	0.0447	2.344	0.7817	0-1
Triazole label	14.3	0.0486	2.4484	0.7599	0-1
Phenyl and Triazole labels combined	14.9	0.0466	2.3962	0.7684	0-1
Hönniger Weiher pond system - Total system					
Phenyl label	49.5	0.014	3.5321	0.6882	3-7
Triazole label	47.5	0.0146	3.5647	0.7616	1-3
Phenyl and Triazole labels combined	48.5	0.0143	3.5484	0.7243	3
Anglerweiher lake system - Aqueous					
Phenyl label	20.3	0.0342	1.8594	0.4243	0-1
Triazole label	15.8	0.0438	2.1876	0.625	1-3
Phenyl and Triazole labels combined	17.8	0.039	2.0235	0.5221	1
Anglerweiher lake system - Total system					
Phenyl label	34.7	0.02	3.2425	0.5497	1-3
Triazole label	32.5	0.0213	3.2778	0.5808	1-3

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Phenyl and Triazole labels combined	33.6	0.0206	3.2601	0.5652	1-3
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<sup>1</sup>See Appendix of this DER for plots of linear regressions.

Data obtained from Appendices 16, 20-23, 34, and 38-41 pp. 53, 57-60, 73, and 77-80.

**TRANSFORMATION PRODUCTS:**

Along with <sup>14</sup>CO<sub>2</sub>, five transformation products were identified: JAU6476-desthio (SXX0665), JAU6476-S-methyl (WAK7861), JAU6476-triazolinone (WAK7860), 1,2,4-triazole and JAU6476-triazolylketone (WAK4995).

The major transformation products detected in water were **JAU6476-desthio** (SXX0665; 2-[2-(1-chlorocyclopropyl)-3-(2-chlorophenyl)-2-hydroxypropyl]-1,2-dihydro-3H-1,2,4-triazole), and **1,2,4-triazole**. JAU6476-desthio was observed at maximum concentrations of 13.9% ([phenyl-UL-<sup>14</sup>C] label, day 0) and 32.3% ([phenyl-UL-<sup>14</sup>C] label, day 7) of applied radioactivity, in the Honniger Weiher and Anglerweiher systems, respectively, and 1,2,4-triazole was observed at a maximum concentration of 37.2% ([3,5-triazole-<sup>14</sup>C] label, day 121) of applied radioactivity in the Anglerweiher system. The corresponding concentrations of JAU6476-desthio in water at the end of the study period were <MDL and 1.2% of applied radioactivity, respectively, and the corresponding concentration of 1,2,4-triazole in water at the end of the study period was 37.2% of the applied radioactivity. The 1,2,4-triazole degradate was not a major transformation product in the Honniger Weiher system (maximum of 0.8% for [3,5-triazole-<sup>14</sup>C] label, day 59). Two major transformation products were detected in sediment: **JAU6476-desthio** and **JAU6476-S-methyl** (WAK7861; alpha-1(1-chlorocyclopropyl)-alpha-[(2-chlorophenyl)methyl]-3-(methylthio)-1H-1,2,4-triazole-1-ethanol). JAU6476-desthio was detected with maximum concentrations of 21.9% ([phenyl-UL-<sup>14</sup>C] label, day 59) and 26.9% (both labels, day 14) of applied radioactivity, observed in the Honniger Weiher and Anglerweiher systems, respectively. The corresponding concentrations in sediment at the end of the study period were 11.1% and 7.1-8.2% of applied radioactivity, respectively. JAU6476-S-methyl was detected with maximum concentrations of 9.6% ([3,5-triazole-<sup>14</sup>C] label, day 7) of applied radioactivity in the Anglerweiher system and is considered a major transformation product of prothioconazole in aerobic sediment. The corresponding concentration of JAU6476-S-methyl in sediment at the end of the study period was 1.9% of the applied radioactivity.

The minor transformation products in water were **JAU6476-S-methyl**, **JAU6476-triazolinone** (WAK7002; 2-[2-(1-chlorocyclopropyl)-3-(2-chlorophenyl)-2-hydroxypropyl]-1,2-dihydro-3H-1,2,4-triazole-3-one), **JAU6476-triazolylketone** (WAK4995), eight unidentified transformation products (M3, M4a, M5, M6, M9, M10, M12, M13) and an unreported number of minor metabolites reported together, observed at maximums of 0.1 to 8.0% of applied radioactivity in the water of both systems, using both radiolabels. The minor transformation products in sediment were **1,2,4-triazole**, **JAU6476-triazolinone** (WAK7002; 2-[2-(1-chlorocyclopropyl)-3-

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(2-chlorophenyl)-2-hydroxypropyl]-1,2-dihydro-3H-1,2,4-triazole-3-one), JAU6476-triazolyketone (WAK4995), nine unidentified transformation products (M3, M3a, M4a, M5, M6, M9, M10, M12, M13) and an unreported number of minor metabolites reported together, observed at maximums of 0.1 to 6.1% of applied radioactivity in the sediment of both systems, using both radiolabels. 1,2,4-Triazole and JAU6476-triazolyketone (WAK4995) were transformation products unique to samples treated with [triazole-3,5-<sup>14</sup>C]prothioconazole.

Unidentified <sup>14</sup>C in the total system during the study (including origin and diffuse radioactivity in the aqueous layer and in organic and hot sediment extracts, and radioactivity in exhaustive sediment extract not identified due to high matrix content) ranged from 0.1% to 8.9% of the applied amount. The total unidentified radioactivity in water and sediment were ≤4.7% and 3.4% of the AR, respectively in either system.

### NON-EXTRACTABLE AND EXTRACTABLE RESIDUES:

In the Honniger Weiher system, extractable [<sup>14</sup>C]residues in sediment (organic and hot extracts combined) for the [phenyl-UL-<sup>14</sup>C] label increased from 13.0% of the applied at day 0 to a range of 45.8-52.0% of the applied at days 14-59, and decreased to 39.3% of the applied at study termination (121 days). In the Honniger Weiher system, extractable [<sup>14</sup>C]residues in sediment (organic and hot extracts combined) for the [3,5-triazole-<sup>14</sup>C] label increased from 18.6% of the applied at day 0 to a maximum of 47.7% of the applied at day 14, and decreased to 30.3% of the applied at study termination (121 days). In the Anglerweiher system, extractable [<sup>14</sup>C]residues in sediment (organic and hot extracts combined) increased from 21.5% and 17.2% of the applied at day 0 to a maximum of 45.5% and 47.2% of the applied at days 14 and 7, respectively, and decreased to 19.6% and 24.1% of the applied at study termination (121 days) for the [phenyl-UL-<sup>14</sup>C] and [3,5-triazole-<sup>14</sup>C] labels, respectively.

The amount of radioactivity in the hot extracts (max. 25.7%) was comparable to the organic extract (max. 28.8%) in the pond system regardless of the radiolabel, whereas the radioactivity in hot extracts of the lake system (max. 6.6%) was significantly smaller than in organic extracts (max. 42.1%) (numbers not shown here). From these results, it is possible that binding of the residues was stronger in the Honniger Weiher pond system than in the Anglerweiher lake system as speculated from the difference of the organic carbon contents.

In the Honniger Weiher system, non-extractable [<sup>14</sup>C]residues in sediment (including residues in filter) for the [phenyl-UL-<sup>14</sup>C] label increased from 8.2% of the applied at day 0 to 36.5% of the applied at day 7, and increased to a range of 45.3-46.4% of the applied from 59 days to study termination (121 days). In the Honniger Weiher system, non-extractable [<sup>14</sup>C]residues in sediment (including residues in filter) for the [3,5-triazole-<sup>14</sup>C] label increased from 8.1% of the applied at day 0 to a range of 36.0-39.4% of the applied at days 7-59, and increased to 46.7% of the applied at study termination (121 days). In the Anglerweiher system, non-extractable [<sup>14</sup>C]residues in sediment (including residues in filter) for the [phenyl-UL-<sup>14</sup>C] label increased from 1.5% of the applied at day 0 to 30.3% of the applied at study termination (121 days). In the

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Anglerweiher system, non-extractable [<sup>14</sup>C]residues in sediment (including residues in filter) for the [3,5-triazole-<sup>14</sup>C] label increased from 1.3% of the applied at day 0 to 20.9% of the applied at day 59, and decreased to 15.3% of the applied at study termination (121 days).

Due to the high level of non-extracted residues in the pond system, the sediment samples in that system were exhaustively extracted under reflux with acetone/hydrochloric acid after hot extraction. The exhaustively extracted portion of radioactivity was smaller than the hot extraction. In the Honniger Weiher system, [<sup>14</sup>C]residues in the exhaustive extract of sediment ranged from 4.3-9.5% and 5.6-14.2% of applied for the [phenyl-UL-<sup>14</sup>C] and [3,5-triazole-<sup>14</sup>C] labels, respectively. In the Anglerweiher system, [<sup>14</sup>C]residues in the exhaustive extract of sediment were not measured for any interval other than at study termination (121 days), where they were observed at 1.0% and 3.6% of applied for the [phenyl-UL-<sup>14</sup>C] and [3,5-triazole-<sup>14</sup>C] labels, respectively. Owing to the high matrix content of the acidic exhaustive extracts no quantitative evaluation of the chromatograms was performed.

### **VOLATILIZATION:**

At the end of the study, 14.8% and 1.9% of applied radioactivity in the Honniger Weiher system was present as CO<sub>2</sub> for the [phenyl-UL-<sup>14</sup>C] and [3,5-triazole-<sup>14</sup>C] labels, respectively. At the end of the study, 29.0% and 1.9% of applied radioactivity in the Anglerweiher system was present as CO<sub>2</sub> for the [phenyl-UL-<sup>14</sup>C] and [3,5-triazole-<sup>14</sup>C] labels, respectively. Volatile organic compounds were <0.1% of the applied radioactivity throughout the study for both radiolabels, in both systems. Most likely, the difference between the two radiolabels was due to the greater proportion of radiolabelled carbons on a phenyl ring versus on a triazole ring.

Volatile organic compounds were <0.1% of the AR throughout the study for both radiolabels, in both systems.

**TRANSFORMATION PATHWAY:** The proposed biotransformation pathway of prothioconazole in an aerobic water- sediment system is shown in Figure 1. The sulfur of prothioconazole may be methylated to form JAU6476-S-methyl, which mineralizes to CO<sub>2</sub>. Prothioconazole may also be desulfurized to form JAU6476-desthio, which can either have its methylated, chlorinated phenyl ring cleaved to form JAU6476-triazolylketone or mineralize to CO<sub>2</sub>. JAU6476-triazolylketone can then degrade to 1,2,4-triazole, which can mineralize to CO<sub>2</sub>. Finally prothioconazole can replace its thione with a ketone to form JAU6476-triazolinone, which may form JAU6476-desthio by unknown mechanism. The eight observed, unidentified minor transformation products (M3, M3a, M4a, M5, M6, M9, M10, M12, and M13) and the unreported number of unidentified metabolites reported together are not included in the discussion of transformation pathway.

**Table 12: Chemical names and CAS numbers for the transformation products of prothioconazole (JAU6476).**

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Applicant's Code Name	CAS Number	CAS and/or IUPAC Chemical Name(s)	Chemical formula	Molecular weight
JAU6476-S-methyl (WAK7861)	178928-71-7	alpha-1(1-chlorocyclopropyl)-alpha-[(2-chlorophenyl)methyl]-3-(methylthio)-1H-1,2,4-triazole-1-ethanol	C <sub>15</sub> H <sub>17</sub> Cl <sub>2</sub> N <sub>3</sub> O S	358.3
JAU6476-desthio (SXX0665)	120983-64-4	2-[2-(1-chlorocyclopropyl)-3-(2-chlorophenyl)-2-hydroxypropyl]-1,2-dihydro-3H-1,2,4-triazole	C <sub>14</sub> H <sub>15</sub> Cl <sub>2</sub> N <sub>3</sub> O	312.2
JAU6476-triazolinone (WAK7860)		2-[2-(1-chlorocyclopropyl)-3-(2-chlorophenyl)-2-hydroxypropyl]-1,2-dihydro-3H-1,2,4-triazole-3-one	C <sub>14</sub> H <sub>15</sub> Cl <sub>2</sub> N <sub>3</sub> O <sub>2</sub>	328.2
JAU6476-triazolylketone (WAK4995)		not reported	C <sub>7</sub> H <sub>8</sub> ClN <sub>3</sub> O	185.66
1,2,4-triazole	288-88-0	1,2,4-triazole	C <sub>2</sub> H <sub>3</sub> N <sub>3</sub>	69.1

**D. SUPPLEMENTARY STUDY- RESULTS:** No supplementary studies were described.

**III. STUDY DEFICIENCIES:**

Only single samples per system were collected at each sampling interval. It is preferred that two or more samples be collected from each treatment at each sampling interval so that within sample variation can be quantified. However, as the SETAC guideline states that “the analysis of single samples at each time point is adequate to meet the objectives of the study,” the single samples collected per sampling interval are therefore acceptable for PMRA.

The OECD guideline recommends a water:sediment ratio between 3:1 and 4:1, whereas the SETAC guideline recommends a ratio between 4:1 and 10:1, based on the oven dry weight of the sediment. The 10:1 ratio of water:dry sediment used in this study is therefore considered acceptable by PMRA. This ratio was likely the cause of the anaerobic conditions in the sediment.

Two German sediment/water systems were used and soil taxonomic classifications are not reported for any of the sediments. It is important to know the taxonomy of the sediment, particularly as both sediments used in the study were foreign (non-US) sediment, in order to be able to evaluate and verify whether or not the test soil is representative of the intended use areas within the U.S.

Characteristics for sediment system analyzed on Feb 18, 1998 samples were reported when the March 24, 1998 samples were the ones actually used in this study. The March 24 samples were



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never analyzed for sediment system characteristics (textural class, CEC, organic content, etc.; Appendices 7 and 8, pp. 43 and 44). Water characteristics from two different samples should not be compared as “prior to start” and “end of exposure” as if they were from the same sample (Appendix 8, p. 44).

This study is classified supplemental for an aerobic aquatic biotransformation study because multiple samples were not used per interval, use of exclusively foreign soils without reporting taxonomic classifications, and lack of water/sediment characterization of actual samples used in the study.

**IV. REVIEWER’S COMMENTS:**

1. The 50% decline times (DT50) of prothioconazole in aerobic water and sediment, as reported by the study authors, are presented in Table 13. The first-order DT<sub>50</sub> values calculated by the study author for prothioconazole (mean of both labels) in the water phase was 0.8 and 1 day in the pond and lake system, respectively. The corresponding DT<sub>50</sub> values for the whole system were 2.8 and 1.6 days. The degradation curve and regression analysis was calculated by the study authors with the evaluation program @ModelManager, Version 1.1, developed and published by Cherwell Scientific Ltd. Oxford, UK. The program was run in the mode “use standard data” as well as “use existing parameter estimates”. For determination of the dissipation kinetics of prothioconazole, the study authors used the mean values of the two radiolabels for each sediment system.

**Table 13. Degradation kinetics for prothioconazole as reported by the study authors (mean of the two radiolabels).**

System	First order/other degradation kinetics			DT50 (days)	DT90 (days)
	Type of kinetics	rate constant, k [1/d]	r <sup>2</sup>		
Hönniger Weiher Pond System					
water	first order	0.848	0.947	0.8	2.7
sediment	not reported				
whole system	‘hockey stick’	0.759 (k <sub>1</sub> ) 0.022 (k <sub>2</sub> )	0.953	2.8	76.4
Anglerweiher Lake System					
water	first order	0.671	0.999	1	3.4
sediment	not reported				
whole system	‘hockey stick’	0.424 (k <sub>1</sub> ) 0.014 (k <sub>2</sub> )	0.998	1.6	23.6

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2. The study authors calculated the DT<sub>50</sub> and DT<sub>90</sub> values for prothioconazole using values as % of applied radioactivity, as opposed to expressing the values as % of initial measured radioactivity (%AR measured at time 0), as preferred by PMRA.
3. The models used by the PMRA reviewer for the Honniger Weiher pond system resulted in a better fit than those of the study authors, but the difference in DT<sub>50</sub> and DT<sub>90</sub> values was very minor. The DT<sub>50</sub> values reported by the study authors were similar to those obtained by the reviewer, but the model for the whole pond system reported by the study author underestimated the DT<sub>90</sub> values.
4. The study authors did not calculate DT<sub>50</sub> and DT<sub>90</sub> values for prothioconazole in the sediment.
5. For PMRA, the values used in the models to estimate Expected Environmental Concentrations in drinking water and in the ecoscenario will be determined after discussions with the modelling group. (First order rates are required and rates obtained from multi-compartment models can not currently be used in the models.)
6. The radioactivity reported for the Honniger Weiher system ([phenyl-UL-<sup>14</sup>C] label) in the “Not Extracted Sediment” column in Appendix 16, p. 53 is actually reporting unextracted radioactivity after the first organic extraction (the reported numbers include radioactivity associated with hot extraction and exhaustive extraction). In other words, the “Not Extracted Sediment” column is reporting all radioactivity in the sediment minus that in the filter and organic extract. In order to calculate radioactivity associated with unextracted sediment, the EPA reviewer subtracted radioactivities associated with Hot extraction and Exhaustive extraction from the the “Not Extracted Sediment” column.
7. Percent of spotted radioactivity is not reported for the hot sediment extracts for day 7 the Honniger Weiher system ([phenyl-UL-<sup>14</sup>C] label) in Appendix 34, p. 73, not allowing for verification of parent and degradate concentrations at day 7 in the sediment.
8. JAU6476-S-methyl was considered by the reviewers to be a major transformation product in sediment and the total Anglerweiher lake system. JAU6476-S-methyl concentrations are a maximum of 9.6% of the applied radioactivity in the sediment on day 7 ([3,5-triazole-<sup>14</sup>C] label); corresponding concentrations in the total system amount to 12.7% of the applied radioactivity. However, JAU6476-S-methyl is likely not a very important product of aerobic aquatic metabolism as it is only detected in the total system above 10% of applied on one sampling interval, in one of two systems, and with one of two labels. There is no reason other than natural variability that it be detected only using the triazole radiolabel. Additionally, the concentration of JAU6476-S-methyl-S-methyl is declining in both systems, with both labels at the end of the

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study, decreasing the likelihood that high concentrations of JAU6476-S-methyl will be found in aerobic aquatic systems at lengths of time longer than that of the study.

9. Pesticide use history at the collection sites is not reported. Also, sampling depth for water and sediment is not reported.

10. Prothioconazole is non-persistent in water and in the whole system, and is non-persistent to moderately persistent in sediments, according to the classification scheme of McEwen and Stephenson (1979).

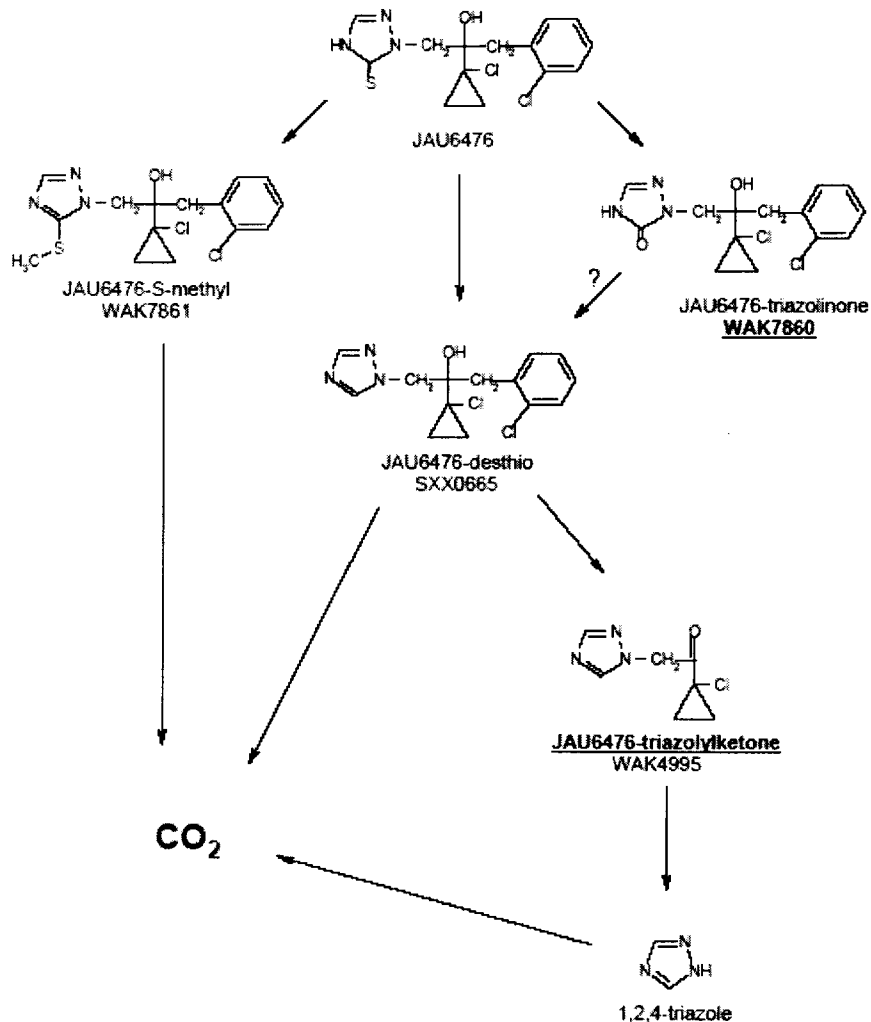
**V. REFERENCES:**

McEwen, F.L., and G.R. Stephenson. 1979. The use and significance of pesticides in the environment. John Wiley and Sons Inc. Toronto. 282 pp.

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**Figure 1. Proposed metabolic pathway of prothioconazole in an aerobic water/sediment system.**

Chemical Name: Prothioconazole  
 MRID 46246515  
 PC 113961  
 Guideline No: 162-4  
 Honniger Weiher Sediment-Water System

**Aqueous; [phenyl-UL-<sup>14</sup>C]JAU6476 (% applied radioactivity)**

Days	0	1	3	7	14	29	59	121	
JAU6476	52.7	19.1	12.7	4.9	2.1	0.8	0.4	<MDL	
JAU6476-desthio	13.9	9.9	6.0	3.7	3.0	1.3	1.7	<MDL	
JAU6476-S-methyl	<MDL	0.6	0.8	0.4	0.2	0.1	<MDL	<MDL	
1,2,4-triazole <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
JAU6476-triazolinone	0.2	0.7	1.1	1.0	1.0	1.5	0.7	<MDL	
WAK4995 <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
M3	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	
M3a	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	
M4a <sup>3</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
M5	<MDL	0.3	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	
M6	<MDL	<MDL	<MDL	<MDL	0.2	<MDL	<MDL	<MDL	
M9 <sup>3</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
M10 <sup>3</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
M12	<MDL	<MDL	<MDL	<MDL	<MDL	0.1	<MDL	<MDL	
M13	0.6	<MDL	0.3	0.1	0.1	<MDL	0.6	<MDL	
Unidentified <sup>1</sup>	0.6	0.5	0.5	0.3	0.1	<MDL	<MDL	1.5	
<b>Total extracted</b>	<b>68.0</b>	<b>31.2</b>	<b>21.4</b>	<b>10.5</b>	<b>6.7</b>	<b>3.9</b>	<b>3.4</b>	<b>1.5</b>	
Total unextracted	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
CO2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
VOC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
<b>Total aqueous recovery</b>	<b>68.0</b>	<b>31.2</b>	<b>21.4</b>	<b>10.5</b>	<b>6.7</b>	<b>3.9</b>	<b>3.4</b>	<b>1.5</b>	<b>AVR 18.3 STDEV 22.5</b>

<sup>1</sup>Unidentified= Origin and Diffuse radioactivity in aqueous layer.

<sup>2</sup>1,2,4-triazole and WAK4995 can only be traced with the [3,5-triazole-<sup>14</sup>C] label.

<sup>3</sup>M4a, M9, and M10 were not detected in the Honniger system using the [phenyl-UL-<sup>14</sup>C] label.

LOQ= 0.1% of applied radioactivity.

**Sediment; [phenyl-UL-<sup>14</sup>C]JAU6476 (% applied radioactivity)**

Days	0	1	3	7	14	29	59	121	
JAU6476	7.2	23.4	21.7	21.0	23.0	16.0	7.5	9.5	
JAU6476-desthio	5.5	11.1	16.0	14.7	15.8	17.1	21.9	11.1	
JAU6476-S-methyl	<MDL	1.8	2.9	3.7	4.0	4.6	5.0	3.1	
1,2,4-triazole <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
JAU6476-triazolinone	<MDL	0.6	1.1	2.1	3.0	4.6	4.8	3.6	
WAK4995 <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
M3	<MDL	0.3	0.1	0.2	0.2	0.3	0.5	<MDL	
M3a	<MDL	<MDL	<MDL	<MDL	<MDL	0.3	<MDL	<MDL	
M4a <sup>3</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
M5	<MDL	0.3	0.4	0.5	0.4	0.4	0.4	0.3	
M6	<MDL	<MDL	<MDL	0.3	<MDL	<MDL	<MDL	<MDL	
M9 <sup>3</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
M10 <sup>3</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
M12	<MDL	<MDL	<MDL	<MDL	0.4	0.9	1.1	1.8	
M13	0.1	<MDL	0.3	0.1	<MDL	<MDL	0.2	<MDL	
Unidentified <sup>1</sup>	0.1	0.7	1.0	0.7	0.8	1.0	1.8	0.8	
<b>Total extracted<sup>4</sup></b>	<b>13.0</b>	<b>38.1</b>	<b>43.5</b>	<b>43.3</b>	<b>47.7</b>	<b>45.2</b>	<b>43.2</b>	<b>30.3</b>	
<b>Exhaustive extract<sup>5</sup></b>	<b>9.5</b>	<b>7.9</b>	<b>8.4</b>	<b>8.1</b>	<b>6.3</b>	<b>5.9</b>	<b>4.3</b>	<b>5.6</b>	
Not extracted	7.5	18.5	20.1	35.8	38.2	39.8	45.9	44.8	
Filter	0.7	1.1	1.0	0.7	0.8	0.6	0.6	0.4	
<b>Total unextracted<sup>6</sup></b>	<b>8.2</b>	<b>19.6</b>	<b>21.1</b>	<b>36.5</b>	<b>38.9</b>	<b>40.4</b>	<b>46.4</b>	<b>45.3</b>	
CO2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
VOC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
<b>Total sediment recovery</b>	<b>30.7</b>	<b>65.6</b>	<b>73.0</b>	<b>87.9</b>	<b>92.9</b>	<b>91.5</b>	<b>94.0</b>	<b>81.1</b>	<b>AVR 77.1 STDEV 21.3</b>

<sup>1</sup>Unidentified= Origin and Diffuse radioactivity in organic and hot extracts.

<sup>2</sup>1,2,4-triazole and WAK4995 can only be traced with the [3,5-triazole-<sup>14</sup>C] label.

<sup>3</sup>M4a, M9, and M10 were not detected in the Honniger system using the [phenyl-UL-<sup>14</sup>C] label.

<sup>4</sup>Total extracted= Radioactivity of Organic and Hot extracts.

<sup>5</sup>Radioactivity in Exhaustive extract not identified due to high matrix content.

<sup>6</sup>Total unextracted= Not extracted radioactivity and filter radioactivity.

LOQ= 0.1% of applied radioactivity.

Chemical Name: Prothioconazole  
 MRID 46246515  
 PC 113961  
 Guideline No: 162-4  
 Honniger Weiher Sediment-Water System

**Total system; [phenyl-UL-<sup>14</sup>C]JAU6476 (% applied radioactivity)**

Days	0	1	3	7	14	29	59	121
JAU6476	59.9	42.4	34.4	25.9	25.1	16.8	7.8	9.5
JAU6476-desthio	19.4	21.0	22.0	18.4	18.7	18.5	23.6	11.1
JAU6476-S-methyl	<MDL	2.4	3.7	4.1	4.3	4.7	5.0	3.1
1,2,4-triazole <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
JAU6476-triazolinone	0.2	1.4	2.3	3.1	3.9	6.0	5.5	3.6
WAK4995 <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M3	<MDL	0.3	0.1	0.2	0.2	0.3	0.5	<MDL
M3a	<MDL	<MDL	<MDL	<MDL	<MDL	0.3	<MDL	<MDL
M4a <sup>3</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M5	<MDL	0.6	0.4	0.5	0.4	0.4	0.4	0.3
M6	<MDL	<MDL	<MDL	0.3	0.2	<MDL	<MDL	<MDL
M9 <sup>3</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M10 <sup>3</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M12	<MDL	<MDL	<MDL	<MDL	0.4	1.1	1.1	1.8
M13	0.8	<MDL	0.6	0.2	0.1	<MDL	0.8	<MDL
Unidentified <sup>1</sup>	0.7	1.2	1.5	1.0	1.0	1.0	1.8	2.4
<b>Total extracted<sup>4</sup></b>	<b>80.9</b>	<b>69.3</b>	<b>64.9</b>	<b>53.8</b>	<b>54.3</b>	<b>49.1</b>	<b>46.7</b>	<b>31.8</b>
<b>Exhaustive extract<sup>5</sup></b>	<b>9.5</b>	<b>7.9</b>	<b>8.4</b>	<b>8.1</b>	<b>6.3</b>	<b>5.9</b>	<b>4.3</b>	<b>5.6</b>
<b>Total unextracted<sup>6</sup></b>	<b>8.2</b>	<b>19.6</b>	<b>21.1</b>	<b>36.5</b>	<b>38.9</b>	<b>40.4</b>	<b>46.4</b>	<b>45.3</b>
CO <sub>2</sub>	n.m.	<MDL	0.1	0.3	0.5	0.9	4.1	14.8
VOC	n.m.	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
<b>Total system recovery</b>	<b>98.6</b>	<b>96.8</b>	<b>94.5</b>	<b>98.7</b>	<b>100.1</b>	<b>96.3</b>	<b>101.6</b>	<b>97.4</b>

AVR 98.0 STDEV 2.2

<sup>1</sup>Unidentified= Origin and Diffuse radioactivity in aqueous layer and organic and hot extracts.

<sup>2</sup>1,2,4-triazole and WAK4955 can only be traced with the [3,5-triazole-<sup>14</sup>C] label.

<sup>3</sup>M4a, M9, and M10 were not detected in the Honniger system using the [phenyl-UL-<sup>14</sup>C] label.

<sup>4</sup>Total extracted= Radioactivity of aqueous layer and Organic and Hot extracts.

<sup>5</sup>Radioactivity in Exhaustive extract not identified due to high matrix content.

<sup>6</sup>Total unextracted= Not extracted radioactivity and filter radioactivity.

Applied= 112733 Bq/1000 uL application solution (p. 18, 29).

LOQ= 0.1% of applied radioactivity.

n.m.= not measured

Data were obtained from Appendices 16, 20, 34, and 38; pp. 53, 57, 73, and 77 of the study report.

Chemical Name: Prothioconazole  
 MRID 46246515  
 PC 113961  
 Guideline No: 162-4  
 Honniger Weiher Sediment-Water System

**Aqueous; [3,5-triazole-<sup>14</sup>C]JAU6476 (% applied radioactivity)**

Days	0	1	3	7	14	29	59	121	AVR	STDEV
JAU6476	59.8	18.3	12.5	7.1	1.9	2.0	0.1	<MDL	18.9	21.5
JAU6476-desthio	7.3	9.2	4.9	4.3	3.3	1.6	0.7	<MDL		
JAU6476-S-methyl	<MDL	0.8	0.7	0.5	0.3	0.1	<MDL	<MDL		
1,2,4-triazole	<MDL	0.2	<MDL	<MDL	<MDL	<MDL	0.8	<MDL		
JAU6476-triazolinone	<MDL	0.8	1.0	1.0	0.9	1.2	0.6	<MDL		
WAK4995	<MDL	<MDL	<MDL	<MDL	<MDL	0.3	<MDL	<MDL		
M3	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL		
M3a	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL		
M4a <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
M5	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL		
M6	<MDL	<MDL	<MDL	<MDL	0.4	0.5	1.5	<MDL		
M9 <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
M10 <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
M12 <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
M13 <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Unidentified <sup>1</sup>	0.2	0.4	0.4	0.5	0.1	<MDL	<MDL	4.7		
<b>Total extracted</b>	<b>67.3</b>	<b>29.7</b>	<b>19.5</b>	<b>13.4</b>	<b>6.9</b>	<b>5.7</b>	<b>3.7</b>	<b>4.7</b>		
Total unextracted	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
CO2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
VOC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
<b>Total aqueous recovery</b>	<b>67.3</b>	<b>29.7</b>	<b>19.5</b>	<b>13.4</b>	<b>6.9</b>	<b>5.7</b>	<b>3.7</b>	<b>4.7</b>	<b>18.9</b>	<b>21.5</b>

<sup>1</sup>Unidentified= Origin and Diffuse radioactivity in aqueous layer.

<sup>2</sup>M4a, M9, M10, M12, and M13 were not detected in the Honniger system using the [3,5-triazole-<sup>14</sup>C] label.  
 LOQ= 0.1% of applied radioactivity.

**Sediment; [3,5-triazole-<sup>14</sup>C]JAU6476 (% applied radioactivity)**

Days	0	1	3	7	14	29	59	121	AVR	STDEV
JAU6476	12.6	22.6	14.4	20.9	18.4	15.3	14.7	6.8	79.1	21.3
JAU6476-desthio	4.8	9.5	14.9	14.0	16.8	16.9	17.7	9.5		
JAU6476-S-methyl	0.1	2.1	2.7	4.0	3.9	4.8	4.1	2.9		
1,2,4-triazole	0.1	0.1	0.2	0.1	0.2	0.4	3.9	6.1		
JAU6476-triazolinone	<MDL	0.6	1.0	2.1	2.8	4.3	6.1	3.1		
WAK4995	<MDL	<MDL	<MDL	<MDL	0.4	1.3	2.1	5.8		
M3	0.3	1.0	0.3	1.1	0.4	0.4	0.3	<MDL		
M3a	<MDL	<MDL	<MDL	<MDL	1.5	0.3	<MDL	<MDL		
M4a <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
M5	0.1	0.4	0.3	0.5	0.6	0.6	1.0	0.5		
M6	<MDL	<MDL	<MDL	0.2	0.3	0.2	0.2	0.4		
M9 <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
M10 <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
M12 <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
M13 <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Unidentified <sup>1</sup>	0.6	1.5	1.3	0.7	0.9	1.3	1.9	4.2		
<b>Total extracted<sup>3</sup></b>	<b>18.6</b>	<b>37.8</b>	<b>35.1</b>	<b>43.6</b>	<b>46.2</b>	<b>45.8</b>	<b>52.0</b>	<b>39.3</b>		
<b>Exhaustive extract<sup>4</sup></b>	<b>6.6</b>	<b>9.6</b>	<b>14.2</b>	<b>7.0</b>	<b>8.6</b>	<b>5.6</b>	<b>7.5</b>	<b>5.9</b>		
Not extracted	7.4	19.0	21.9	35.0	38.5	37.7	37.3	46.1		
Filter	0.7	0.9	1.0	1.0	0.9	0.7	0.5	0.6		
<b>Total unextracted<sup>5</sup></b>	<b>8.1</b>	<b>19.9</b>	<b>22.9</b>	<b>36.0</b>	<b>39.4</b>	<b>38.4</b>	<b>37.8</b>	<b>46.7</b>		
CO2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
VOC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
<b>Total sediment recovery</b>	<b>33.3</b>	<b>67.3</b>	<b>72.2</b>	<b>86.6</b>	<b>94.2</b>	<b>89.8</b>	<b>97.3</b>	<b>91.9</b>	<b>79.1</b>	<b>21.3</b>

<sup>1</sup>Unidentified= Origin and Diffuse radioactivity in organic and hot extracts.

<sup>2</sup>M4a, M9, M10, M12, and M13 were not detected in the Honniger system using the [3,5-triazole-<sup>14</sup>C] label.

<sup>3</sup>Total extracted= Radioactivity of Organic and Hot extracts.

<sup>4</sup>Radioactivity in Exhaustive extract not identified due to high matrix content.

<sup>5</sup>Total unextracted= Not extracted radioactivity and filter radioactivity.

LOQ= 0.1% of applied radioactivity.

Chemical Name: Prothioconazole  
 MRID 46246515  
 PC 113961  
 Guideline No: 162-4  
 Honniger Weiher Sediment-Water System

**Total system; [3,5-triazole-<sup>14</sup>C]JAU6476 (% applied radioactivity)**

Days	0	1	3	7	14	29	59	121		
JAU6476	72.4	40.9	26.9	28.0	20.3	17.3	14.8	6.8		
JAU6476-desthio	12.1	18.7	19.8	18.3	20.1	18.5	18.4	9.5		
JAU6476-S-methyl	0.1	2.9	3.4	4.5	4.2	4.9	4.1	2.9		
1,2,4-triazole	0.1	0.3	0.2	0.1	0.2	0.4	4.7	6.1		
JAU6476-triazolinone	<MDL	1.4	2.0	3.1	3.7	5.5	6.7	3.1		
WAK4995	<MDL	<MDL	<MDL	<MDL	0.4	1.6	2.1	5.8		
M3	0.3	1.0	0.3	1.1	0.4	0.4	0.3	<MDL		
M3a	<MDL	<MDL	<MDL	<MDL	1.5	0.3	<MDL	<MDL		
M4a <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
M5	0.1	0.4	0.3	0.5	0.6	0.6	1.0	0.5		
M6	<MDL	<MDL	<MDL	0.2	0.7	0.7	1.7	0.4		
M9 <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
M10 <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
M12 <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
M13 <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Unidentified <sup>1</sup>	0.8	1.9	1.7	1.2	1.0	1.3	1.9	8.9		
<b>Total extracted<sup>3</sup></b>	<b>85.9</b>	<b>67.5</b>	<b>54.6</b>	<b>57.0</b>	<b>53.1</b>	<b>51.5</b>	<b>55.7</b>	<b>44.0</b>		
<b>Exhaustive extract<sup>4</sup></b>	<b>6.6</b>	<b>9.6</b>	<b>14.2</b>	<b>7.0</b>	<b>8.6</b>	<b>5.6</b>	<b>7.5</b>	<b>5.9</b>		
<b>Total unextracted<sup>5</sup></b>	<b>8.1</b>	<b>19.9</b>	<b>22.9</b>	<b>36.0</b>	<b>39.4</b>	<b>38.4</b>	<b>37.8</b>	<b>46.7</b>		
CO <sub>2</sub>	n.m.	<MDL	<MDL	<MDL	<MDL	<MDL	0.1	0.2	1.9	
VOC	n.m.	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL		
<b>Total system recovery</b>	<b>100.6</b>	<b>97.0</b>	<b>91.7</b>	<b>100.0</b>	<b>101.1</b>	<b>95.6</b>	<b>101.2</b>	<b>98.5</b>	<b>AVR</b>	<b>STDEV</b>
									<b>98.2</b>	<b>3.3</b>

<sup>1</sup>Unidentified= Origin and Diffuse radioactivity in aqueous layer and organic and hot extracts.

<sup>2</sup>M4a, M9, M10, M12, and M13 were not detected in the Honniger system using the [3,5-triazole-<sup>14</sup>C] label.

<sup>3</sup>Total extracted= Radioactivity of aqueous layer and Organic and Hot extracts.

<sup>4</sup>Radioactivity in Exhaustive extract not identified due to high matrix content.

<sup>5</sup>Total unextracted= Not extracted radioactivity and filter radioactivity.

Applied= 59571 Bq/1000 uL application solution (p. 18, 29).

LOQ= 0.1% of applied radioactivity.

n.m.= not measured

Data were obtained from Appendices 21 and 39; pp. 58 and 78 of the study report.



Chemical Name: Prothioconazole  
 MRID 46246515  
 PC 113961  
 Guideline No: 162-4  
 Anglerweiher Sediment-Water System

**Aqueous; [phenyl-UL-<sup>14</sup>C]JAU6476 (% applied radioactivity)**

Days	0	1	3	7	14	29	59	121
JAU6476	68.7	32.9	9.9	1.7	0.8	0.4	0.2	0.4
JAU6476-desthio	9.3	18.3	31.2	32.3	26.3	21.4	7.2	1.2
JAU6476-S-methyl	<MDL	1.5	2.4	2.5	1.4	0.8	0.1	<MDL
1,2,4-triazole <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
JAU6476-triazolinone	0.3	<MDL	0.3	0.3	0.5	0.3	1.6	1.3
WAK4995 <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M3	<MDL	<MDL	0.1	<MDL	<MDL	0.4	1.3	1.0
M3a <sup>3</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M4a	<MDL	<MDL	<MDL	<MDL	0.3	<MDL	<MDL	0.2
M5	<MDL	0.5	1.5	2.1	2.7	2.5	3.1	2.4
M6	<MDL	0.3	1.0	1.5	1.7	2.7	5.1	4.9
M9	<MDL	0.2	0.8	0.8	1.0	0.9	1.7	<MDL
M10	<MDL	0.4	1.1	1.2	1.2	0.8	<MDL	<MDL
M12 <sup>3</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M13	0.7	0.6	1.5	1.7	2.3	2.0	2.4	1.8
Unidentified <sup>1</sup>	0.4	0.2	0.3	0.1	0.0	<MDL	<MDL	0.6
<b>Total extracted</b>	<b>79.4</b>	<b>54.9</b>	<b>50.1</b>	<b>44.2</b>	<b>38.2</b>	<b>32.2</b>	<b>22.7</b>	<b>13.8</b>
Total unextracted	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CO2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VOC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Total aqueous recovery</b>	<b>79.4</b>	<b>54.9</b>	<b>50.1</b>	<b>44.2</b>	<b>38.2</b>	<b>32.2</b>	<b>22.7</b>	<b>13.8</b>

AVR 41.9 STDEV 20.4

<sup>1</sup>Unidentified= Origin and Diffuse radioactivity in aqueous layer.  
<sup>2</sup>1,2,4-triazole and WAK4955 can only be traced with the [3,5-triazole-<sup>14</sup>C] label.  
<sup>3</sup>M3a and M12 were not detected in the Anglerweiher system using the [phenyl-UL-<sup>14</sup>C] label.  
 LOQ= 0.1% of applied radioactivity.

**Sediment; [phenyl-UL-<sup>14</sup>C]JAU6476 (% applied radioactivity)**

Days	0	1	3	7	14	29	59	121
JAU6476	17.0	21.0	15.3	11.8	8.0	5.8	5.1	3.4
JAU6476-desthio	3.9	11.7	16.8	22.3	26.9	25.0	16.4	8.2
JAU6476-S-methyl	0.2	4.4	5.5	6.4	6.9	6.7	4.1	2.0
1,2,4-triazole <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
JAU6476-triazolinone	<MDL	<MDL	<MDL	0.2	<MDL	0.3	0.3	2.3
WAK4995 <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M3	<MDL	0.2	0.6	1.1	1.6	2.6	2.4	0.8
M3a <sup>3</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M4a	<MDL	<MDL	<MDL	<MDL	<MDL	0.1	0.5	<MDL
M5	<MDL	<MDL	0.2	0.6	0.9	1.3	1.7	<MDL
M6	<MDL	0.2	<MDL	<MDL	<MDL	0.4	0.6	1.5
M9	<MDL	<MDL	0.2	0.1	<MDL	<MDL	<MDL	<MDL
M10	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
M12 <sup>3</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M13	0.1	0.2	0.4	0.3	0.4	0.3	0.3	<MDL
Unidentified <sup>1</sup>	0.3	0.8	0.8	0.8	0.8	0.9	1.2	1.4
<b>Total extracted<sup>4</sup></b>	<b>21.5</b>	<b>38.5</b>	<b>39.8</b>	<b>43.6</b>	<b>45.5</b>	<b>43.4</b>	<b>32.6</b>	<b>19.6</b>
<b>Exhaustive extract<sup>5</sup></b>	<b>n.m.</b>	<b>n.m.</b>	<b>n.m.</b>	<b>n.m.</b>	<b>n.m.</b>	<b>n.m.</b>	<b>n.m.</b>	<b>1.0</b>
Not extracted	0.7	6.3	9.2	12.8	15.5	18.9	26.1	29.5
Filter	0.8	1.0	1.2	0.9	0.9	1.1	0.9	0.8
<b>Total unextracted<sup>6</sup></b>	<b>1.5</b>	<b>7.3</b>	<b>10.4</b>	<b>13.7</b>	<b>16.4</b>	<b>20.0</b>	<b>27.0</b>	<b>30.3</b>
CO2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VOC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Total sediment recovery</b>	<b>23.0</b>	<b>45.8</b>	<b>50.2</b>	<b>57.3</b>	<b>61.9</b>	<b>63.4</b>	<b>59.6</b>	<b>50.9</b>

AVR 51.5 STDEV 13.1

<sup>1</sup>Unidentified= Origin and Diffuse radioactivity in organic and hot extracts.  
<sup>2</sup>1,2,4-triazole and WAK4955 can only be traced with the [3,5-triazole-<sup>14</sup>C] label.  
<sup>3</sup>M3a and M12 were not detected in the Anglerweiher system using the [phenyl-UL-<sup>14</sup>C] label.  
<sup>4</sup>Total extracted= Radioactivity of Organic and Hot extracts.  
<sup>5</sup>Radioactivity in Exhaustive extract not identified due to high matrix content.  
<sup>6</sup>Total unextracted= Not extracted radioactivity and filter radioactivity.  
 n.m.= not measured  
 LOQ= 0.1% of applied radioactivity.

Chemical Name: Prothioconazole  
 MRID 46246515  
 PC 113961  
 Guideline No: 162-4  
 Anglerweiher Sediment-Water System

**Total system; [phenyl-UL-<sup>14</sup>C]JAU6476 (% applied radioactivity)**

Days	0	1	3	7	14	29	59	121
JAU6476	85.7	53.9	25.2	13.5	8.8	6.2	5.3	3.8
JAU6476-desthio	13.2	30.0	48.0	54.6	53.2	46.4	23.6	9.4
JAU6476-S-methyl	0.2	5.9	7.9	8.9	8.3	7.5	4.2	2.0
1,2,4-triazole <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
JAU6476-triazolinone	0.3	<MDL	0.3	0.5	0.5	0.6	1.9	3.6
WAK4995 <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M3	<MDL	0.2	0.7	1.1	1.6	3.0	3.7	1.8
M3a <sup>3</sup>	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
M4a	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M5	<MDL	0.5	1.7	2.7	3.6	3.8	4.8	2.4
M6	<MDL	0.5	1.0	1.5	1.7	3.1	5.7	6.4
M9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M12 <sup>3</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Unidentified <sup>1</sup>	0.7	1.0	1.1	0.9	0.8	0.9	1.2	2.0
<b>Total extracted<sup>4</sup></b>	<b>100.9</b>	<b>93.4</b>	<b>89.9</b>	<b>87.8</b>	<b>83.7</b>	<b>75.6</b>	<b>55.3</b>	<b>33.4</b>
<b>Exhaustive extract<sup>5</sup></b>	<b>n.m.</b>	<b>n.m.</b>	<b>n.m.</b>	<b>n.m.</b>	<b>n.m.</b>	<b>n.m.</b>	<b>n.m.</b>	<b>1.0</b>
<b>Total unextracted<sup>6</sup></b>	<b>1.5</b>	<b>7.3</b>	<b>10.4</b>	<b>13.7</b>	<b>16.4</b>	<b>20.0</b>	<b>27.0</b>	<b>30.3</b>
CO <sub>2</sub>	n.m.	<MDL	0.1	0.4	1.5	4.4	13.3	29.0
VOC	n.m.	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
<b>Total system recovery</b>	<b>102.4</b>	<b>100.7</b>	<b>100.4</b>	<b>101.9</b>	<b>101.6</b>	<b>100.0</b>	<b>95.6</b>	<b>93.7</b>

**AVR STDEV**  
**99.5 3.2**

<sup>1</sup>Unidentified= Origin and Diffuse radioactivity in aqueous layer and organic and hot extracts.

<sup>2</sup>1,2,4-triazole and WAK4955 can only be traced with the [3,5-triazole-<sup>14</sup>C] label.

<sup>3</sup>M3a and M12 were not detected in the Anglerweiher system using the [phenyl-UL-<sup>14</sup>C] label.

<sup>4</sup>Total extracted= Radioactivity of aqueous layer and Organic and Hot extracts.

<sup>5</sup>Radioactivity in Exhaustive extract not identified due to high matrix content.

<sup>6</sup>Total unextracted= Not extracted radioactivity and filter radioactivity.

Applied= 112733 Bq/1000 uL application solution (p. 18, 29).

LOQ= 0.1% of applied radioactivity.

n.m.= not measured

Data were obtained from Appendices 22 and 40; pp. 59 and 79 of the study report.

Chemical Name: Prothioconazole  
 MRID 46246515  
 PC 113961  
 Guideline No: 162-4  
 Anglerweiher Sediment-Water System

**Aqueous; [3,5-triazole-<sup>14</sup>C]JAU6476 (% applied radioactivity)**

Days	0	1	3	7	14	29	59	121
JAU6476	76.3	39.2	11.0	1.7	0.9	0.7	0.4	<MDL
JAU6476-desthio	5.1	18.9	31.9	30.0	26.9	20.3	7.6	1.1
JAU6476-S-methyl	<MDL	1.5	2.7	3.1	1.3	1.2	0.2	<MDL
1,2,4-triazole	<MDL	0.5	1.5	1.7	3.3	3.5	12.6	37.2
JAU6476-triazolinone	0.3	<MDL	0.3	0.3	0.5	0.3	2.2	1.6
WAK4995	<MDL	<MDL	<MDL	0.7	2.4	2.2	8.0	5.6
M3	<MDL	<MDL	<MDL	<MDL	<MDL	0.4	1.2	1.1
M3a <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M4a <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M5	0.4	0.5	1.5	1.4	3.0	3.4	3.6	2.9
M6	0.4	0.3	1.1	0.8	2.5	4.6	7.7	4.6
M9	<MDL	0.5	2.0	0.6	1.1	0.8	2.9	<MDL
M10 <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M12 <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M13 <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Minor metabolites	<MDL	<MDL	<MDL	0.9	1.6	1.3	<MDL	<MDL
Unidentified <sup>1</sup>	0.4	0.1	0.4	0.2	<MDL	<MDL	0.1	1.6
<b>Total extracted</b>	<b>82.9</b>	<b>61.5</b>	<b>52.4</b>	<b>41.4</b>	<b>43.5</b>	<b>38.7</b>	<b>46.5</b>	<b>55.7</b>
Total unextracted	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CO2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VOC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Total aqueous recovery</b>	<b>82.9</b>	<b>61.5</b>	<b>52.4</b>	<b>41.4</b>	<b>43.5</b>	<b>38.7</b>	<b>46.5</b>	<b>55.7</b>

**AVR STDEV**  
**52.8 14.4**

<sup>1</sup>Unidentified= Origin and Diffuse radioactivity in aqueous layer.

<sup>2</sup>M3a, M4a, M10, M12, and M13 were not detected in the Anglerweiher system using the [3,5-triazole-<sup>14</sup>C] label.

LOQ= 0.1% of applied radioactivity.

**Sediment; [3,5-triazole-<sup>14</sup>C]JAU6476 (% applied radioactivity)**

Days	0	1	3	7	14	29	59	121
JAU6476	13.6	18.3	14.7	10.4	7.7	6.9	4.4	3.3
JAU6476-desthio	3.1	9.8	16.8	24.2	26.9	24.5	14.0	7.1
JAU6476-S-methyl	0.1	3.7	5.3	9.6	6.4	7.8	3.6	1.9
1,2,4-triazole	0.1	0.2	0.4	0.1	0.6	0.4	1.9	4.6
JAU6476-triazolinone	<MDL	<MDL	<MDL	0.4	0.2	1.5	<MDL	<MDL
WAK4995	<MDL	<MDL	<MDL	<MDL	0.3	0.4	1.1	0.3
M3	<MDL	0.2	0.8	1.1	1.7	2.2	3.0	1.1
M3a <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M4a <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M5	<MDL	<MDL	0.2	0.2	1.0	0.5	2.1	1.5
M6	0.2	<MDL	<MDL	0.3	0.3	0.2	0.4	0.9
M9	<MDL	0.1	0.1	0.1	<MDL	<MDL	<MDL	<MDL
M10 <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M12 <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M13 <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Minor metabolites	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	0.7	<MDL
Unidentified <sup>1</sup>	0.1	0.7	0.7	0.8	0.6	0.8	3.0	3.4
<b>Total extracted<sup>3</sup></b>	<b>17.2</b>	<b>33.0</b>	<b>39.0</b>	<b>47.2</b>	<b>45.7</b>	<b>45.2</b>	<b>34.2</b>	<b>24.1</b>
<b>Exhaustive extract<sup>4</sup></b>	<b>n.m</b>	<b>n.m</b>	<b>n.m</b>	<b>n.m</b>	<b>n.m</b>	<b>n.m</b>	<b>n.m</b>	<b>3.6</b>
Not extracted	0.6	5.9	8.6	13.6	13.9	15.0	20.1	14.6
Filter	0.7	0.8	1.0	1.0	1.0	1.3	0.8	0.7
<b>Total unextracted<sup>5</sup></b>	<b>1.3</b>	<b>6.7</b>	<b>9.6</b>	<b>14.6</b>	<b>14.9</b>	<b>16.3</b>	<b>20.9</b>	<b>15.3</b>
CO2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VOC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Total sediment recovery</b>	<b>18.5</b>	<b>39.7</b>	<b>48.6</b>	<b>61.8</b>	<b>60.6</b>	<b>61.5</b>	<b>55.1</b>	<b>43.0</b>

**AVR STDEV**  
**48.6 14.8**

<sup>1</sup>Unidentified= Origin and Diffuse radioactivity in organic and hot extracts.

<sup>2</sup>M3a, M4a, M10, M12, and M13 were not detected in the Anglerweiher system using the [3,5-triazole-<sup>14</sup>C] label.

<sup>3</sup>Total extracted= Radioactivity of Organic and Hot extracts.

<sup>4</sup>Radioactivity in Exhaustive extract not identified due to high matrix content.

<sup>5</sup>Total unextracted= Not extracted radioactivity and filter radioactivity.

n.m.= not measured

LOQ= 0.1% of applied radioactivity.

Chemical Name: Prothioconazole  
 MRID 46246515  
 PC 113961  
 Guideline No: 162-4  
 Anglerweiher Sediment-Water System

**Total system; [3,5-triazole-<sup>14</sup>C]JAU6476 (% applied radioactivity)**

Days	0	1	3	7	14	29	59	121		
JAU6476	89.9	57.5	25.7	12.1	8.6	7.6	4.8	3.3		
JAU6476-desthio	8.2	28.7	48.7	54.2	53.8	44.8	21.6	8.2		
JAU6476-S-methyl	0.1	5.2	8.0	12.7	7.7	9.0	3.8	1.9		
1,2,4-triazole	0.1	0.7	1.9	1.8	3.9	3.9	14.5	41.8		
JAU6476-triazolinone	0.3	<MDL	0.3	0.7	0.7	1.8	2.2	1.6		
WAK4995	<MDL	<MDL	<MDL	0.7	2.7	2.6	9.1	5.9		
M3	<MDL	0.2	0.8	1.1	1.7	2.6	4.2	2.2		
M3a <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
M4a <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
M5	0.4	0.5	1.7	1.6	4.0	3.9	5.7	4.4		
M6	0.6	0.3	1.1	1.1	2.8	4.8	8.1	5.5		
M9	<MDL	0.6	2.1	0.7	1.1	0.8	2.9	<MDL		
M10 <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
M12 <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
M13 <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Minor metabolites	<MDL	<MDL	<MDL	0.9	1.6	1.3	0.7	<MDL		
Unidentified <sup>1</sup>	0.5	0.8	1.1	1.0	0.6	0.8	3.1	5.0		
<b>Total extracted<sup>3</sup></b>	<b>100.1</b>	<b>94.5</b>	<b>91.4</b>	<b>88.6</b>	<b>89.2</b>	<b>83.9</b>	<b>80.7</b>	<b>79.8</b>		
<b>Exhaustive extract<sup>4</sup></b>	<b>n.m.</b>	<b>n.m.</b>	<b>n.m.</b>	<b>n.m.</b>	<b>n.m.</b>	<b>n.m.</b>	<b>n.m.</b>	<b>3.6</b>		
<b>Total unextracted<sup>5</sup></b>	<b>1.3</b>	<b>6.7</b>	<b>9.6</b>	<b>14.6</b>	<b>14.9</b>	<b>16.3</b>	<b>20.9</b>	<b>15.3</b>		
CO <sub>2</sub>	n.m.	<MDL	<MDL	0.1	0.1	0.1	0.3	1.9		
VOC	n.m.	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL		
<b>Total system recovery</b>	<b>101.4</b>	<b>101.2</b>	<b>101.0</b>	<b>103.3</b>	<b>104.2</b>	<b>100.3</b>	<b>101.9</b>	<b>100.6</b>	<b>AVR</b>	<b>STDEV</b>
									<b>101.7</b>	<b>1.4</b>

<sup>1</sup>Unidentified= Origin and Diffuse radioactivity in aqueous layer and organic and hot extracts.

<sup>2</sup>M3a, M4a, M10, M12, and M13 were not detected in the Anglerweiher system using the [3,5-triazole-<sup>14</sup>C] label.

<sup>3</sup>Total extracted= Radioactivity of aqueous layer and Organic and Hot extracts.

<sup>4</sup>Radioactivity in Exhaustive extract not identified due to high matrix content.

<sup>5</sup>Total unextracted= Not extracted radioactivity and filter radioactivity.

Applied= 59571 Bq/1000 uL application solution (p. 18, 29).

LOQ= 0.1% of applied radioactivity.

n.m.= not measured

Data were obtained from Appendices 23 and 41; pp. 60 and 80 of the study report.

Chemical Name: Prothioconazole  
 MRID 46246515  
 PC 113961  
 Guideline No: 162-4

**Honniger Weiher Sediment-Water System**

Days	Label	0	1	3	7	14	29	59	121	AVR
Total aqueous recovery	phenyl	68.0	31.2	21.4	10.5	6.7	3.9	3.4	1.5	18.3
Total sediment recovery	phenyl	30.7	65.6	73.0	87.9	92.9	91.5	94.0	81.1	77.1
Water-sediment distribution ratio	phenyl	2.21	0.47	0.29	0.12	0.07	0.04	0.04	0.02	0.24
Total aqueous recovery	triazole	67.3	29.7	19.5	13.4	6.9	5.7	3.7	4.7	18.9
Total sediment recovery	triazole	33.3	67.3	72.2	86.6	94.2	89.8	97.3	91.9	79.1
Water-sediment distribution ratio	triazole	2.02	0.44	0.27	0.15	0.07	0.06	0.04	0.05	0.24

**Anglerweiher Sediment-Water System**

Days	Label	0	1	3	7	14	29	59	121	AVR
Total aqueous recovery	phenyl	79.4	54.9	50.1	44.2	38.2	32.2	22.7	13.8	41.9
Total sediment recovery	phenyl	23.0	45.8	50.2	57.3	61.9	63.4	59.6	50.9	51.5
Water-sediment distribution ratio	phenyl	3.45	1.20	1.00	0.77	0.62	0.51	0.38	0.27	0.81
Total aqueous recovery	triazole	82.9	61.5	52.4	41.4	43.5	38.7	46.5	55.7	52.8
Total sediment recovery	triazole	18.5	39.7	48.6	61.8	60.6	61.5	55.1	43.0	48.6
Water-sediment distribution ratio	triazole	4.48	1.55	1.08	0.67	0.72	0.63	0.84	1.30	1.09

Chemical Name: Prothioconazole  
 MRID 46246515  
 PC 113961  
 Guideline No: 162-4  
 Honniger Weiher Sediment-Water System

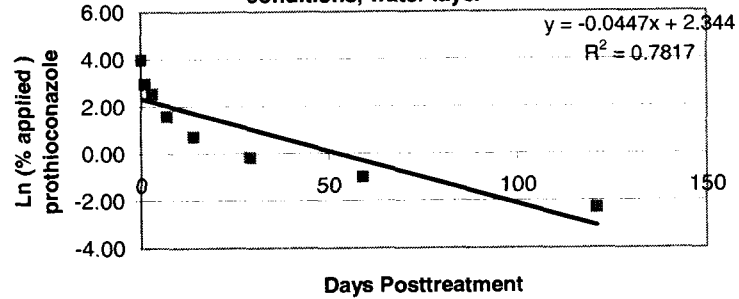
Aqueous [phenyl-UL-<sup>14</sup>C] prothioconazole

Days	% applied	Ln (% applied)
0	52.7	3.96
1	19.1	2.95
3	12.7	2.54
7	4.9	1.58
14	2.1	0.72
29	0.8	-0.17
59	0.4	-0.99
121	<MDL	-2.30

Intervals <MDL are graphed at the MDL;  
 MDL= 0.1% of the applied.  
 Data were obtained from Appendices 16, 20, 34,  
 and 38; pp. 53, 57, 73, and 77 of the study report.

Calculated Aqueous Half life = 15.5 days  
 Observed Aqueous DT<sub>50</sub> = 0-1 days

Dissipation of [phenyl-UL-<sup>14</sup>C] prothioconazole in Honniger Weiher sediment-water system under aerobic conditions, water layer



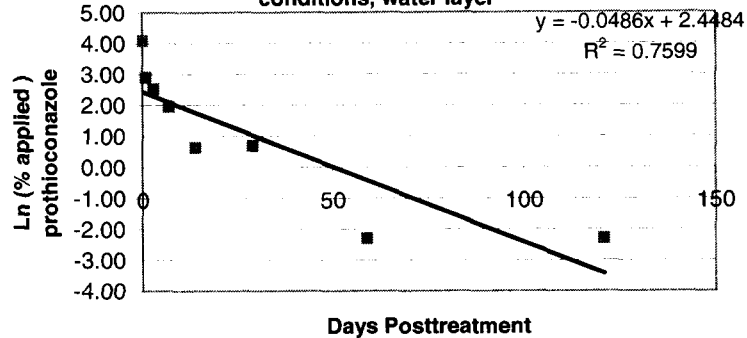
Aqueous [3,5-triazole-<sup>14</sup>C] prothioconazole

Days	% applied	Ln (% applied)
0	59.8	4.09
1	18.3	2.91
3	12.5	2.53
7	7.1	1.96
14	1.9	0.64
29	2.0	0.69
59	0.1	-2.30
121	<MDL	-2.30

Intervals <MDL are graphed at the MDL;  
 MDL= 0.1% of the applied.  
 Data were obtained from Appendices 21 and 39;  
 pp. 58 and 78 of the study report.

Calculated Aqueous Half life = 14.3 days  
 Observed Aqueous DT<sub>50</sub> = 0-1 days

Dissipation of [3,5-triazole-<sup>14</sup>C] prothioconazole in Honniger Weiher sediment-water system under aerobic conditions, water layer



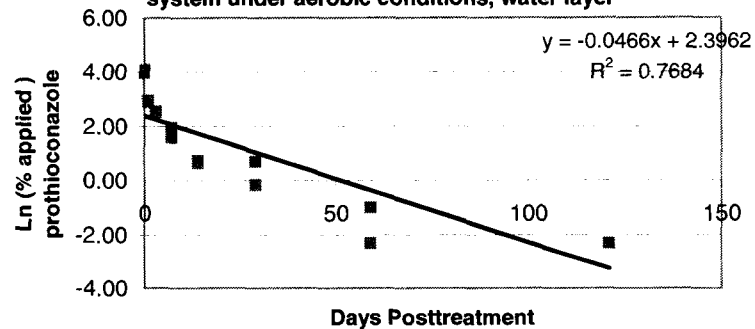
Aqueous [3,5-triazole-<sup>14</sup>C] and [phenyl-UL-<sup>14</sup>C]prothioconazole

Days	% applied	Ln (% applied)
0	52.7	3.96
0	59.8	4.09
1	19.1	2.95
1	18.3	2.91
3	12.7	2.54
3	12.5	2.53
7	4.9	1.58
7	7.1	1.96
14	2.1	0.72
14	1.9	0.64
29	0.8	-0.17
29	2.0	0.69
59	0.4	-0.99
59	0.1	-2.30
121	<MDL	-2.30
121	<MDL	-2.30

Intervals <MDL are graphed at the MDL;  
 MDL= 0.1% of the applied.  
 Data were obtained from Appendices 16, 20, 21, 34, 38 and 39; pp. 53, 57, 58, 73, 77 and 78 of the study report.

Calculated Aqueous Half life = 14.9 days  
 Observed Aqueous DT<sub>50</sub> = 0-1 days

Dissipation of [phenyl-UL-<sup>14</sup>C] and [3,5-triazole-<sup>14</sup>C] prothioconazole in Honniger Weiher sediment-water system under aerobic conditions, water layer



Chemical Name: Prothioconazole  
 MRID 46246515  
 PC 113961  
 Guideline No: 162-4  
 Honniger Weiher Sediment-Water System

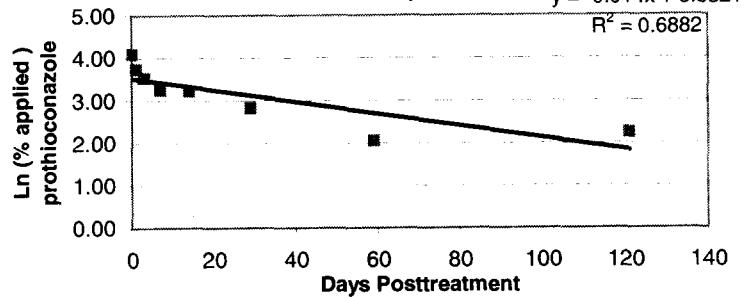
Total system [phenyl-UL-<sup>14</sup>C] prothioconazole

Days	% applied	Ln (% applied)
0	59.9	4.09
1	42.4	3.75
3	34.4	3.54
7	25.9	3.25
14	25.1	3.22
29	16.8	2.82
59	7.8	2.06
121	9.5	2.25

Intervals <MDL are graphed at the MDL;  
 MDL= 0.1% of the applied.  
 Data were obtained from Appendices 16, 20, 34,  
 and 38; pp. 53, 57, 73, and 77 of the study report.

Calculated Total system Half life = 49.5 days  
 Observed Total system DT<sub>50</sub> = 3-7 days

Dissipation of [phenyl-UL-<sup>14</sup>C] prothioconazole in Honniger Weiher sediment-water system under aerobic conditions, total system



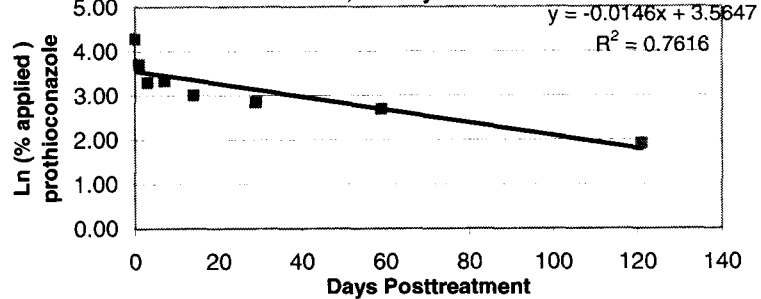
Total system [3,5-triazole-<sup>14</sup>C] prothioconazole

Days	% applied	Ln (% applied)
0	72.4	4.28
1	40.9	3.71
3	26.9	3.29
7	28.0	3.33
14	20.3	3.01
29	17.3	2.85
59	14.8	2.69
121	6.8	1.92

Intervals <MDL are graphed at the MDL;  
 MDL= 0.1% of the applied.  
 Data were obtained from Appendices 21 and 39;  
 pp. 58 and 78 of the study report.

Total system Half life = 47.5 days  
 Observed Total system DT<sub>50</sub> = 1-3 days

Dissipation of [3,5-triazole-<sup>14</sup>C] prothioconazole in Honniger Weiher sediment-water system under aerobic conditions, total system



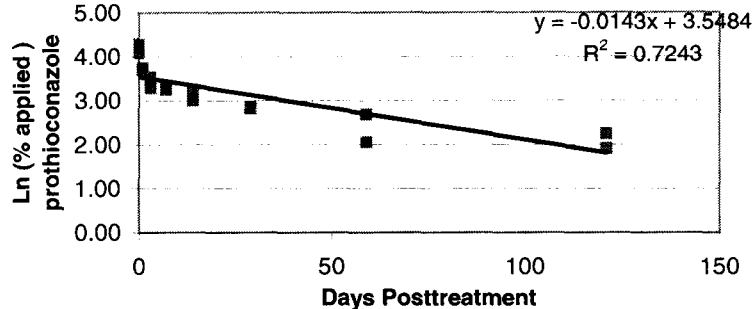
Total system [3,5-triazole-<sup>14</sup>C] and [phenyl-UL-<sup>14</sup>C] prothioconazole

Days	% applied	Ln (% applied)
0	59.9	4.09
0	72.4	4.28
1	42.4	3.75
1	40.9	3.71
3	34.4	3.54
3	26.9	3.29
7	25.9	3.25
7	28.0	3.33
14	25.1	3.22
14	20.3	3.01
29	16.8	2.82
29	17.3	2.85
59	7.8	2.06
59	14.8	2.69
121	9.5	2.25
121	6.8	1.92

Intervals <MDL are graphed at the MDL;  
 MDL= 0.1% of the applied.  
 Data were obtained from Appendices 16, 20, 21, 34, 38 and 39; pp. 53, 57, 58, 73, 77 and 78 of the study report.

Total system Half life = 48.5 days  
 Observed Total system DT<sub>50</sub> = 3 days

Dissipation of [phenyl-UL-<sup>14</sup>C] and [3,5-triazole-<sup>14</sup>C] prothioconazole in Honniger Weiher sediment-water system under aerobic conditions, total system



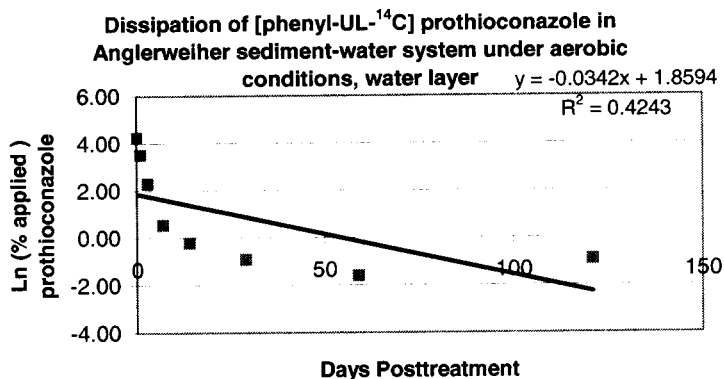
Chemical Name: Prothioconazole  
 MRID 46246515  
 PC 113961  
 Guideline No: 162-4  
 Anglerweiher Sediment-Water System

Aqueous [phenyl-UL-<sup>14</sup>C] prothioconazole

Days	% applied	Ln (% applied)
0	68.7	4.23
1	32.9	3.49
3	9.9	2.29
7	1.7	0.53
14	0.8	-0.22
29	0.4	-0.92
59	0.2	-1.61
121	0.4	-0.92

Intervals <MDL are graphed at the MDL;  
 MDL= 0.1% of the applied.  
 Data were obtained from Appendices 22 and 40;  
 pp. 59 and 79 of the study report.

Calculated Aqueous Half life = 20.3 days  
 Observed Aqueous DT<sub>50</sub> = 0-1 days

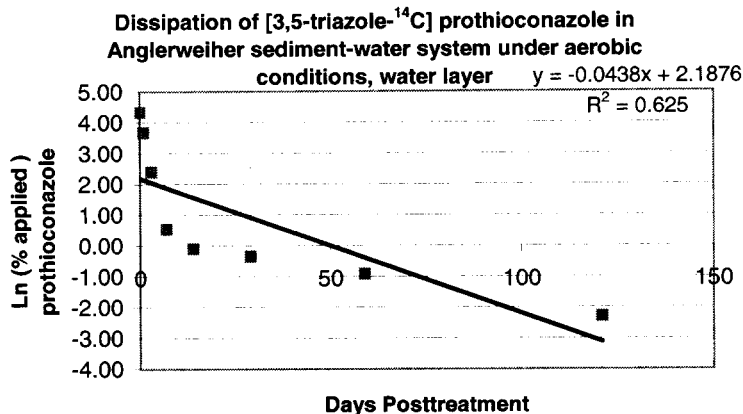


Aqueous [3,5-triazole-<sup>14</sup>C] prothioconazole

Days	% applied	Ln (% applied)
0	76.3	4.33
1	39.2	3.67
3	11.0	2.40
7	1.7	0.53
14	0.9	-0.11
29	0.7	-0.36
59	0.4	-0.92
121	<MDL	-2.30

Intervals <MDL are graphed at the MDL;  
 MDL= 0.1% of the applied.  
 Data were obtained from Appendices 23 and 41;  
 pp. 60 and 80 of the study report.

Calculated Aqueous Half life = 15.8 days  
 Observed Aqueous DT<sub>50</sub> = 1-3 days

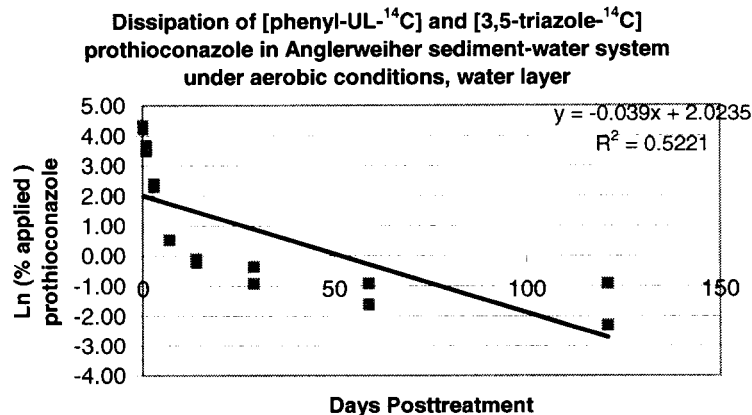


Aqueous [3,5-triazole-<sup>14</sup>C] and [phenyl-UL-<sup>14</sup>C]prothioconazole

Days	% applied	Ln (% applied)
0	68.7	4.23
0	76.3	4.33
1	32.9	3.49
1	39.2	3.67
3	9.9	2.29
3	11.0	2.40
7	1.7	0.53
7	1.7	0.53
14	0.8	-0.22
14	0.9	-0.11
29	0.4	-0.92
29	0.7	-0.36
59	0.2	-1.61
59	0.4	-0.92
121	0.4	-0.92
121	<MDL	-2.30

Intervals <MDL are graphed at the MDL;  
 MDL= 0.1% of the applied.  
 Data were obtained from Appendices 22, 23, 40 and 41; pp. 59, 60, 79 and 80 of the study report.

Calculated Aqueous Half life = 17.8 days  
 Observed Aqueous DT<sub>50</sub> = 1 day





Chemical Name: Prothioconazole  
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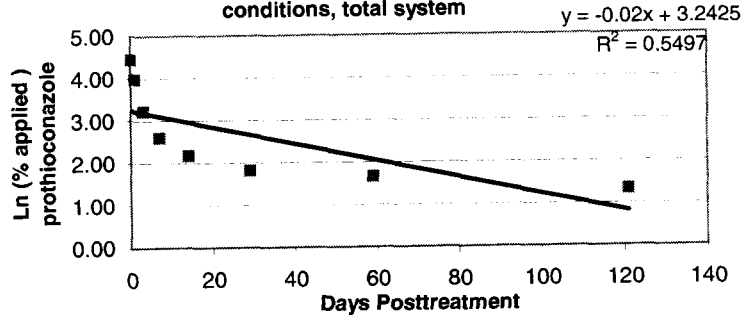
Total system [phenyl-UL-<sup>14</sup>C] prothioconazole

Days	% applied	Ln (% applied)
0	85.7	4.45
1	53.9	3.99
3	25.2	3.23
7	13.5	2.60
14	8.8	2.17
29	6.2	1.82
59	5.3	1.67
121	3.8	1.34

Intervals <MDL are graphed at the MDL;  
 MDL= 0.1% of the applied.  
 Data were obtained from Appendices 22 and 40;  
 pp. 59 and 79 of the study report.

Calculated Total system Half life = 34.7 days  
 Observed Total system DT<sub>50</sub> = 1-3 days

Dissipation of [phenyl-UL-<sup>14</sup>C] prothioconazole in Anglerweiher sediment-water system under aerobic conditions, total system



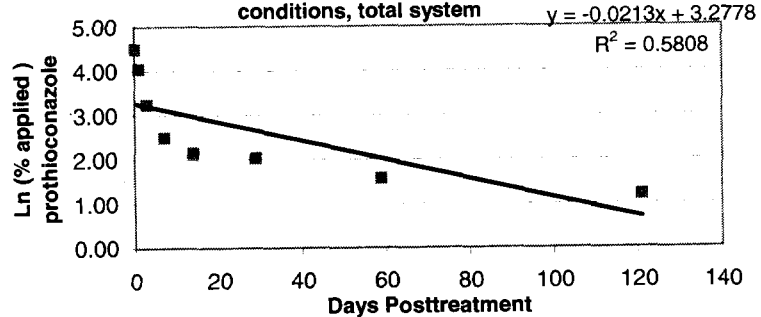
Total system [3,5-triazole-<sup>14</sup>C] prothioconazole

Days	% applied	Ln (% applied)
0	89.9	4.50
1	57.5	4.05
3	25.7	3.25
7	12.1	2.49
14	8.6	2.15
29	7.6	2.03
59	4.8	1.57
121	3.3	1.19

Intervals <MDL are graphed at the MDL;  
 MDL= 0.1% of the applied.  
 Data were obtained from Appendices 23 and 41;  
 pp. 60 and 80 of the study report.

Total system Half life = 32.5 days  
 Observed Total system DT<sub>50</sub> = 1-3 days

Dissipation of [3,5-triazole-<sup>14</sup>C] prothioconazole in Anglerweiher sediment-water system under aerobic conditions, total system



Aqueous [3,5-triazole-<sup>14</sup>C] and [phenyl-UL-<sup>14</sup>C] prothioconazole

Days	% applied	Ln (% applied)
0	85.7	4.45
0	89.9	4.50
1	53.9	3.99
1	57.5	4.05
3	25.2	3.23
3	25.7	3.25
7	13.5	2.60
7	12.1	2.49
14	8.8	2.17
14	8.6	2.15
29	6.2	1.82
29	7.6	2.03
59	5.3	1.67
59	4.8	1.57
121	3.8	1.34
121	3.3	1.19

Intervals <MDL are graphed at the MDL;  
 MDL= 0.1% of the applied.  
 Data were obtained from Appendices 22, 23, 40 and 41; pp. 59, 60, 79 and 80 of the study report.

Total system Half life = 33.6 days  
 Observed Total system DT<sub>50</sub> = 1-3 days

Dissipation of [phenyl-UL-<sup>14</sup>C] and [3,5-triazole-<sup>14</sup>C] prothioconazole in Anglerweiher sediment-water system under aerobic conditions, total system

