

MUNOX®

ORGANIC DEGRADATION RATES



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3.....	Fuel Oil-in-Soil
4.....	Terpene based Solvent
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6.....	MEK, Toluene
7.....	Methyl Ethylacetate, Ethylacetate
8.....	Butylacetate, Methyl Propylacetate
9.....	Methyl Pentanone, Cyclohexanone
10.....	Methylene Chloride
11.....	Phenol
12.....	Pentachlorophenol
13.....	2,4-Dichlorophenoxy Acetic Acid
14.....	2,4,5-Trichlorophenoxy Acetic Acid
15.....	Diethylphthalate
16.....	Endrin, Aldrin
17.....	Trichloroethylene, Tetrachloroethylene
18.....	2,2-Dichloropropane, 1,2-Dichloroethane
19.....	Total Organic Carbon
20.....	Nitrate-N

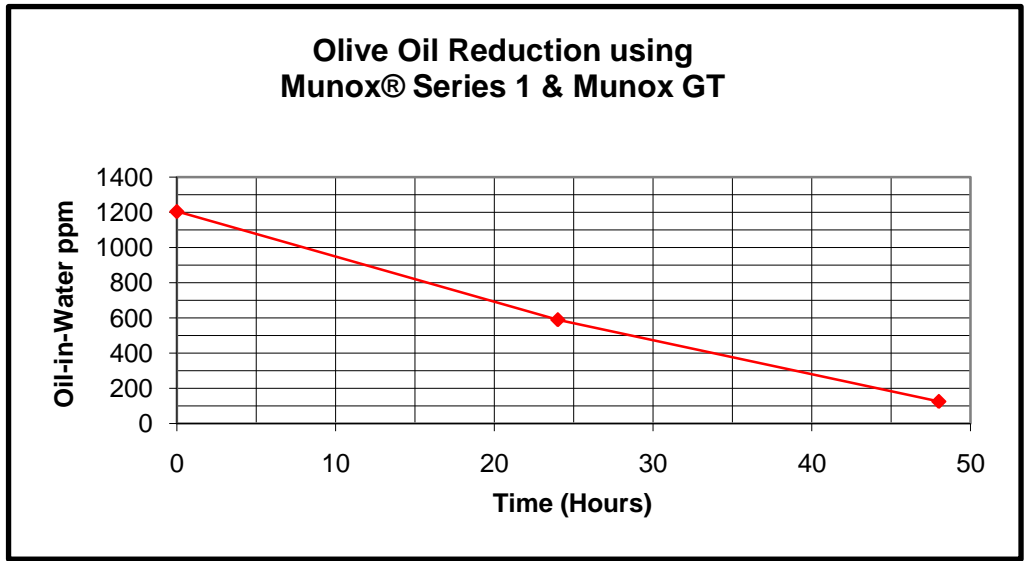
Graph 1

EDIBLE OIL

Olive Oil Reduction using
Munox® Series 1 & Munox GT

<u>Time Hours</u>	<u>Oil-in-Water ppm</u>
0	1205
24	590
48	125

**Degradation
Rate** 22.5 mg/L/Hr
at 1E06 CFU/ml



% Reduction: 90% in 48 Hours

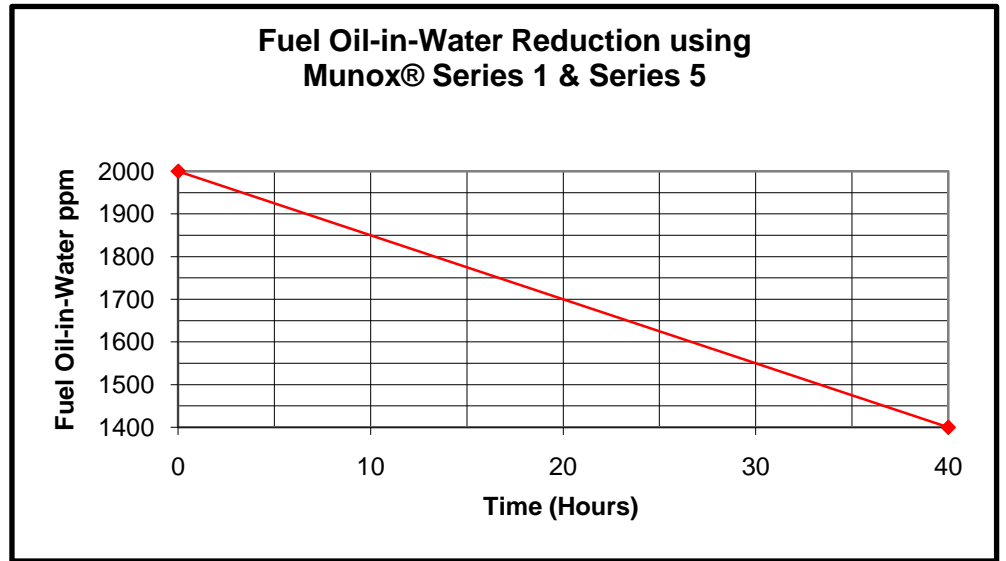
Graph 2

PETROLEUM HYDROCARBONS

<u>Time Hours</u>	<u>Fuel Oil-in-Water ppm</u>
0	2000
40	1400

Degradation Rate	15.00 mg/L/Hr at 1E06 CFU/ml
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% Reduction: 30% in 40 Hours



Graph 3

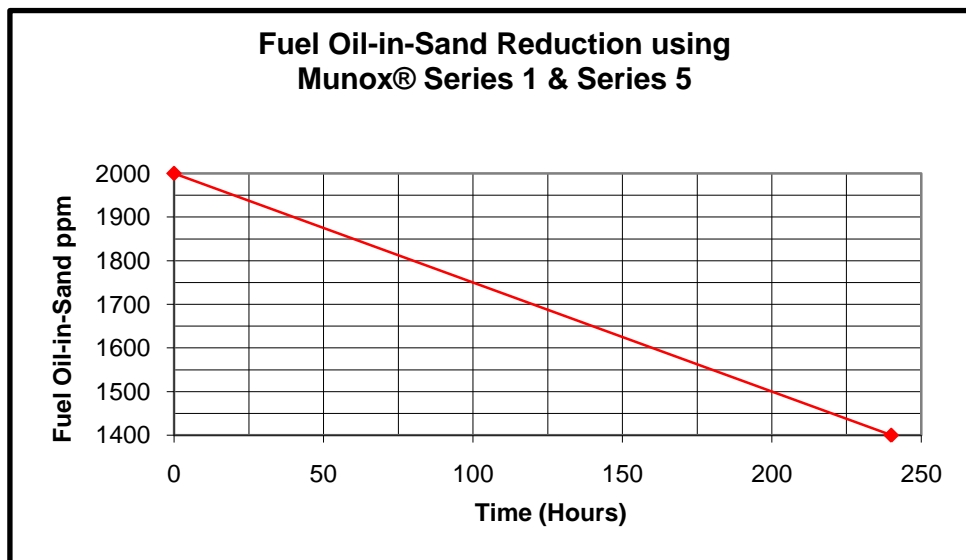
PETROLEUM HYDROCARBONS

Fuel Oil-in-Sand Reduction using
Munox® Series 1 & Series 5

<u>Time Hours</u>	<u>Fuel Oil-in-Sand ppm</u>
0	2000
240	1400

**Degradation
Rate** 2.50 mg/L/Hr
 at 1E06 CFU/ml

% Reduction: 30% in 240 Hours



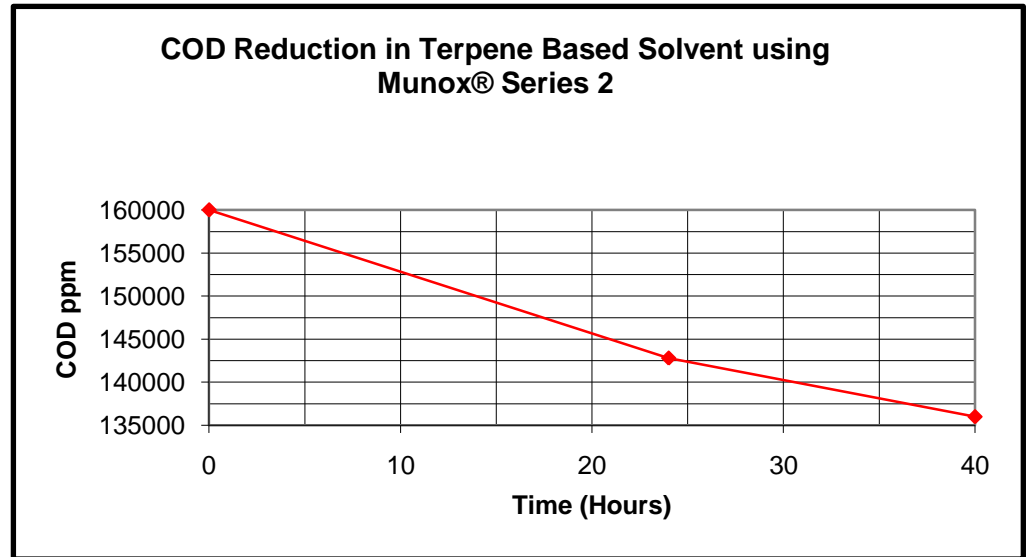
Graph 4

TERPENE BASED SOLVENT

<u>Time Hours</u>	<u>Used Solvent COD ppm</u>
0	160000
24	142800
40	136000

**Degradation
Rate** 600 mg/L/Hr
at 1E06 CFU/ml

% Reduction: 15% in 40 Hours

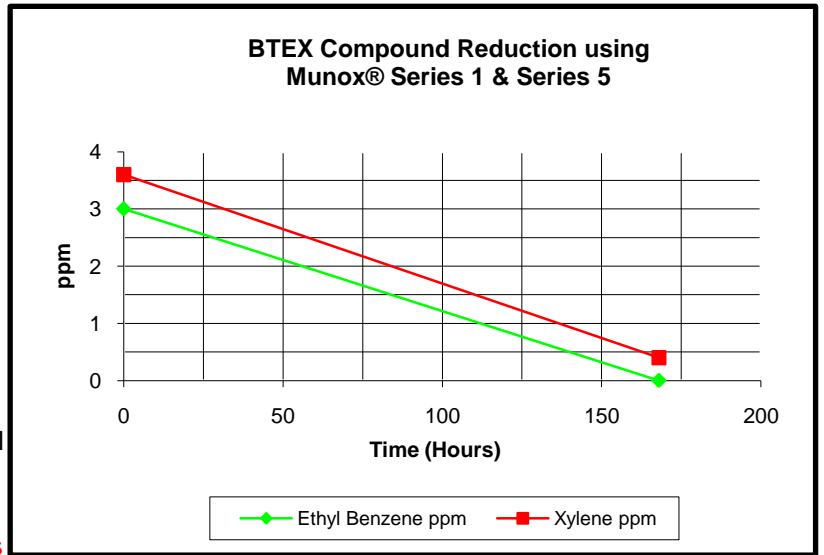


Graph 5

PETROLEUM HYDROCARBONS

Time Hours	Ethyl Benzene ppm	Xylene ppm
0	3	3.6
168	0	0.4

Degradation Rate	0.02 mg/L/Hr at 1E06 CFU/ml	0.02 mg/L/Hr at 1E06 CFU/ml
% Reduction	100% in 168 Hrs	89% in 168 Hrs



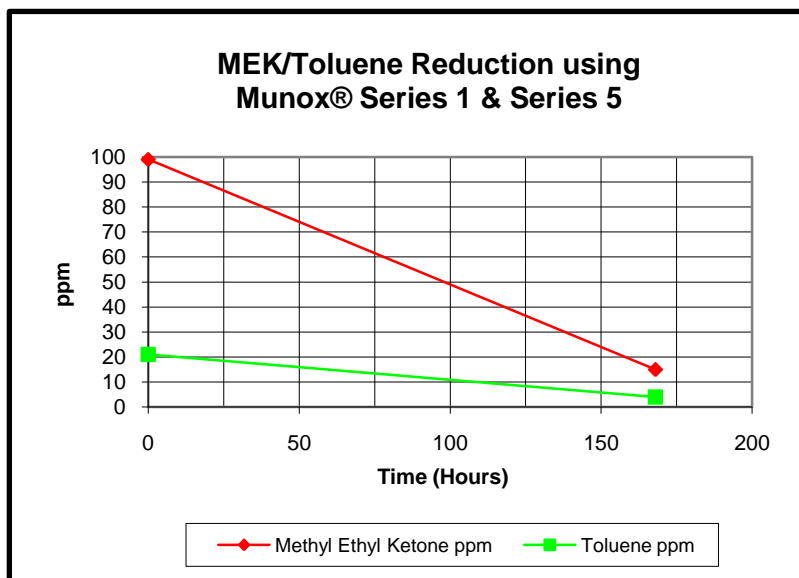
Graph 6

ORGANIC SOLVENTS

Time Hours	Methyl Ethyl Ketone ppm	Toluene ppm
0	99	21
168	15	4

Degradation Rate	0.5 mg/L/Hr at 1E06 CFU/ml	0.1 mg/L/Hr at 1E06 CFU/ml
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% Reduction	85% in 168 Hrs	81% in 168 Hrs
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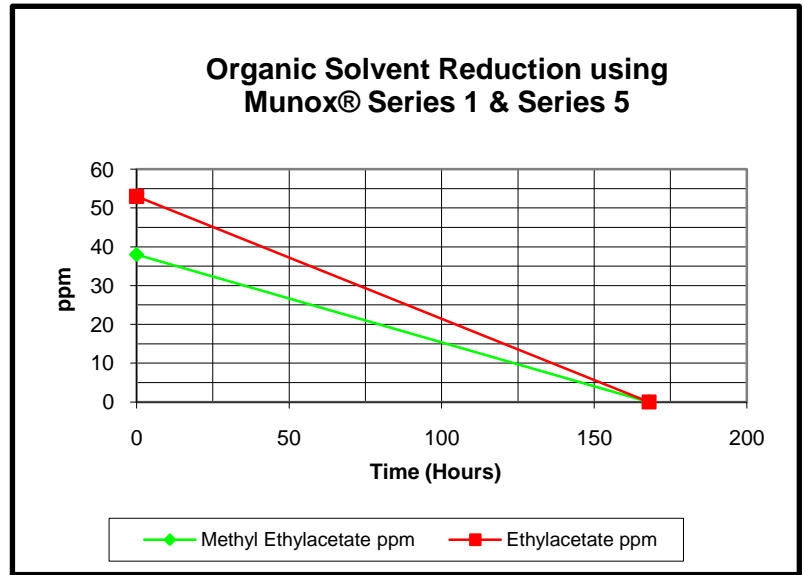
Graph 7

ORGANIC SOLVENTS

Time Hours	Methyl Ethylacetate ppm	Ethylacetate ppm
0	38	53
168	0	0

Degradation Rate	0.23 mg/L/Hr at 1E06 CFU/ml	0.32 mg/L/Hr at 1E06 CFU/ml
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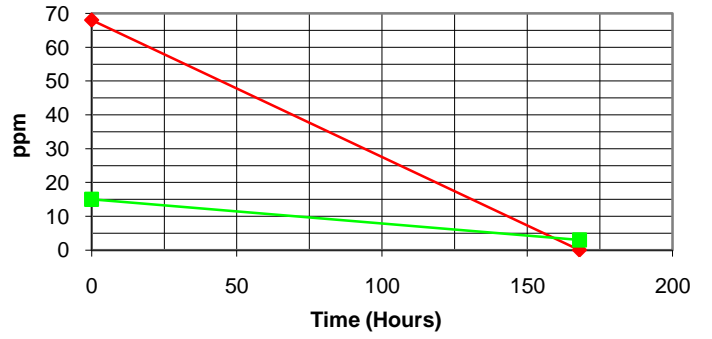
% Reduction	100% in 168 Hrs	100% in 168 Hrs
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Graph 8

ORGANIC SOLVENTS

Organic Solvent Reduction using Munox® Series 1 & Series 5



Time Hours	Butylacetate ppm	Methyl Propylacetate ppm
0	68	15
168	0	3

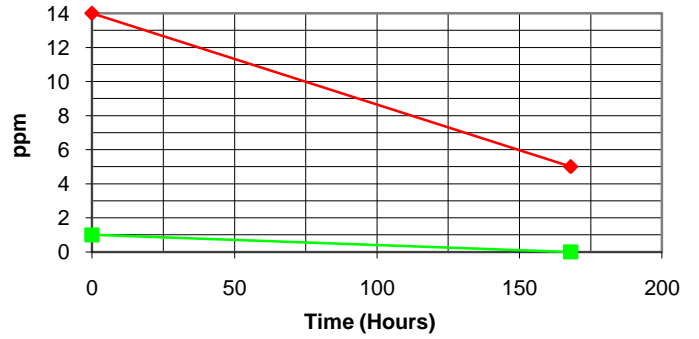
Degradation Rate	0.4 mg/L/Hr at 1E06 CFU/ml	0.07 mg/L/Hr at 1E06 CFU/ml
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% Reduction	100% in 168 Hrs	80% in 168 Hrs
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Graph 9

ORGANIC SOLVENTS

Organic Solvent Reduction using Munox® Series 1 & Series 5



Time Hours	Methyl Pentanone ppm	Cyclohexanone ppm
0	14	1
168	5	0

Degradation Rate	0.5 mg/L/Hr at 1E06 CFU/ml	0.006 mg/L/Hr at 1E06 CFU/ml
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% Reduction	64% in 168 Hrs	100% in 168 Hrs
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Graph 10

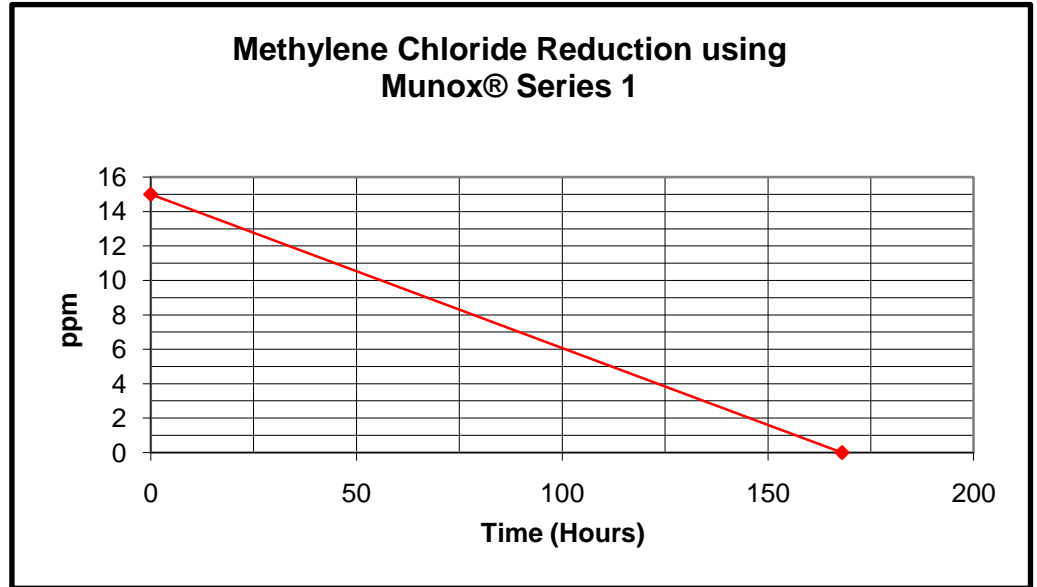
ORGANIC SOLVENTS

Methylene Chloride Reduction using Munox® Series 1

Time Hours	Methylene Chloride ppm
0	15
168	0

Degradation Rate 0.09 mg/L/Hr at 1E06 CFU/ml

% Reduction 100% in 168 Hrs



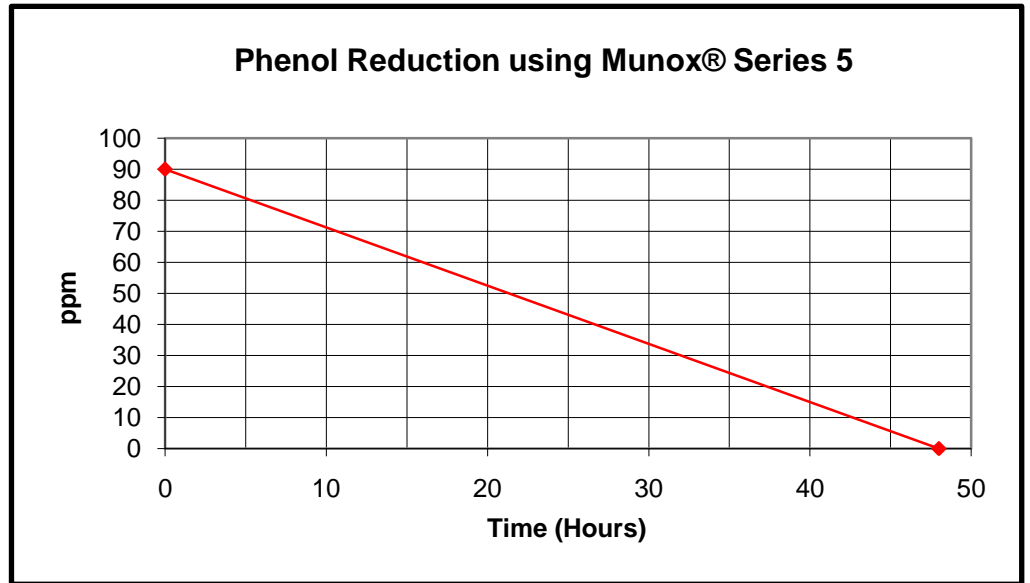
Graph 11

ORGANIC SOLVENTS

<u>Time Hours</u>	<u>Phenol ppm</u>
0	90
48	0

**Degradation
Rate** 1.875 mg/L/Hr
 at 1E06 CFU/ml

% Reduction **100% in 48 Hrs**



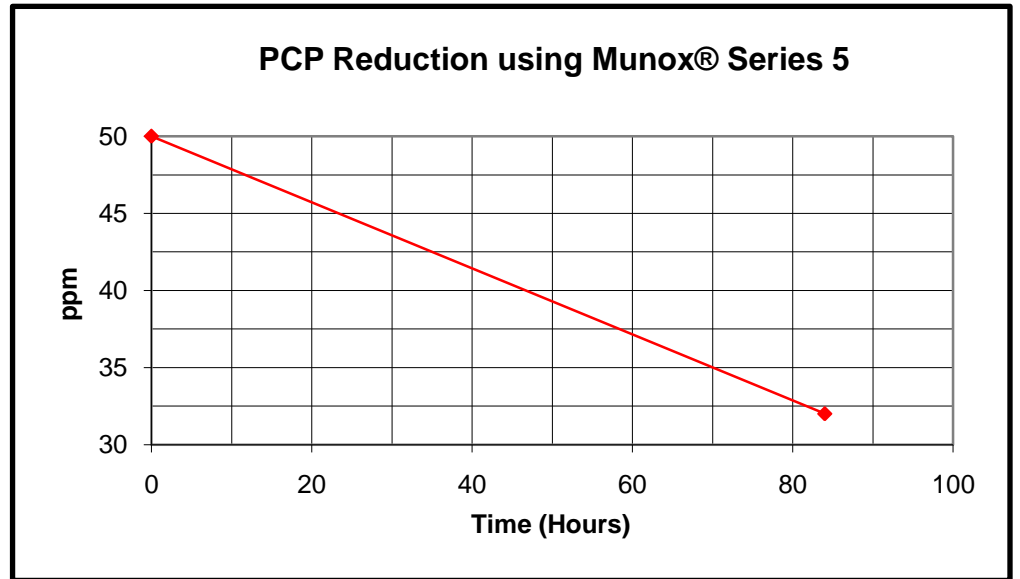
Graph 12

HERBICIDES / PESTICIDES

<u>Time Hours</u>	<u>Pentachlorophenol ppm</u>
0	50
84	32

**Degradation
Rate** 0.21 mg/L/Hr
at 1E06 CFU/ml

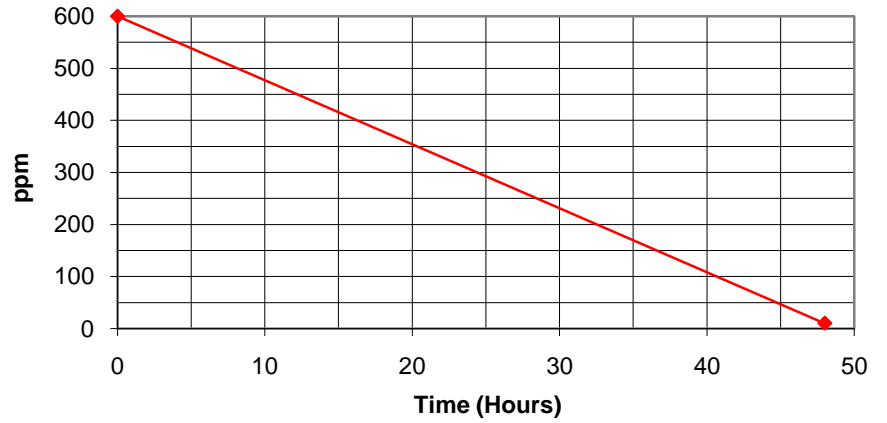
% Reduction **35% in 84 Hrs**



Graph 13

HERBICIDES / PESTICIDES

2,4-D Reduction Using Munox® Series 5



Time Hours	2,4-Dichlorophenoxy Acetic Acid ppm
0	600
48	10

Degradation Rate: 12.3 mg/L/Hr at 1E06 CFU/ml

% Reduction: 98% in 48 Hrs

Graph 14

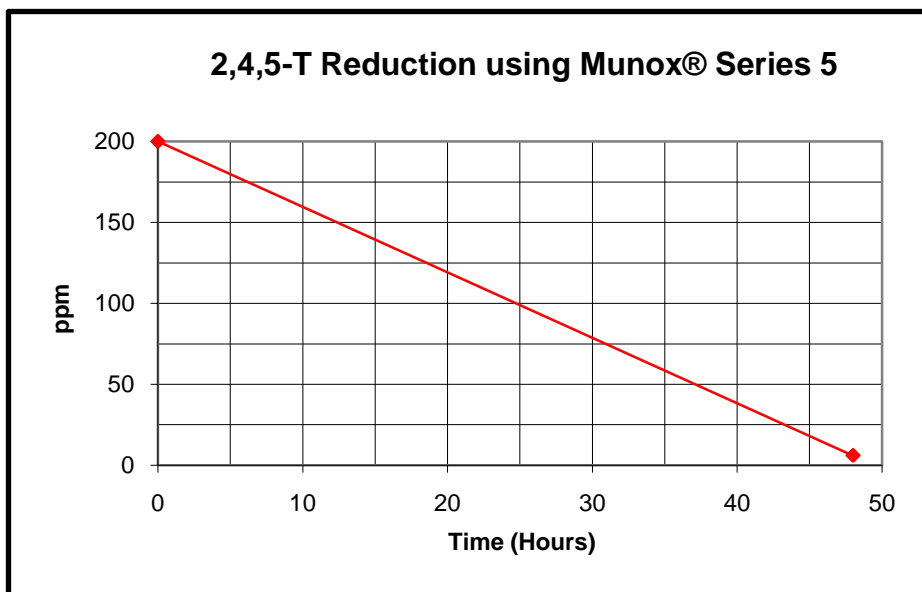
HERBICIDES / PESTICIDES

2,4,5-T Reduction using Munox® Series 5

<u>Time Hours</u>	<u>2,4,5-Trichlorophenoxy Acetic Acid ppm</u>
0	200
48	6

**Degradation
Rate** 4.04 mg/L/Hr
 at 1E06 CFU/ml

% Reduction **97% in 48 Hrs**



Graph 15

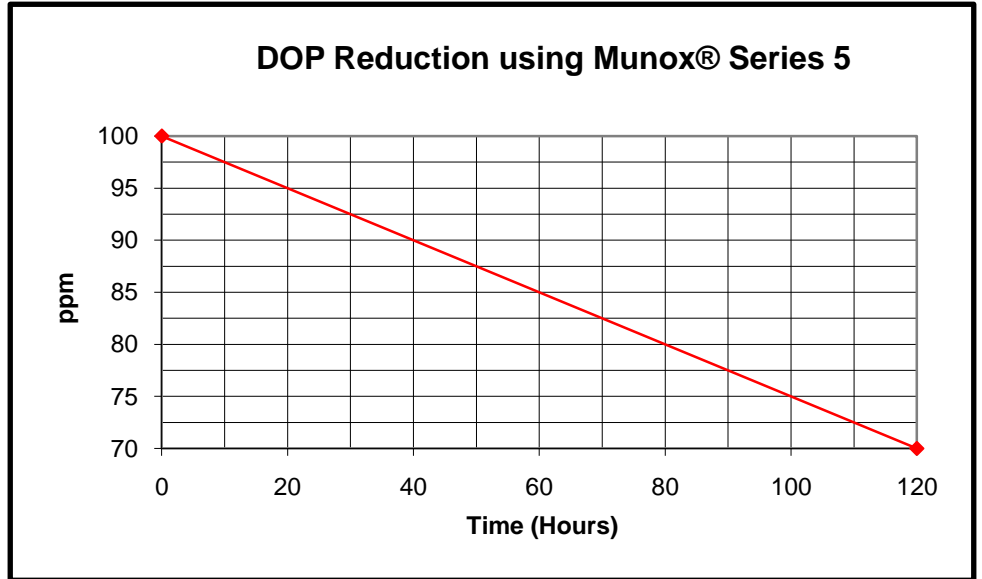
HERBICIDES / PESTICIDES

DOP Reduction using Munox® Series 5

<u>Time Hours</u>	<u>Diethylphthalate ppm</u>
0	100
120	70

**Degradation
Rate** 0.25 mg/L/Hr
 at 1E06 CFU/ml

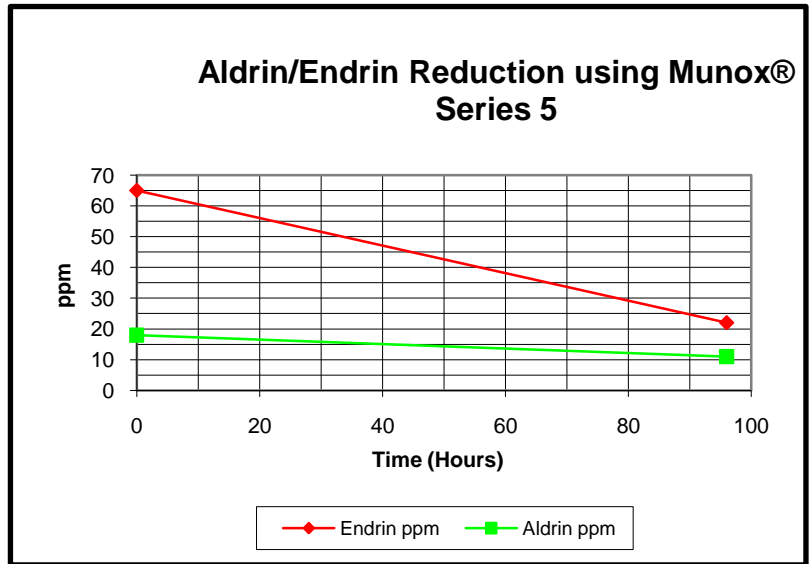
% Reduction **30% in 120 Hrs**



Graph 16

HERBICIDES / PESTICIDES

<u>Time Hours</u>	<u>Endrin ppm</u>	<u>Aldrin ppm</u>
0	65	18
96	22	11
Degradation Rate	0.45 mg/L/Hr at 1E06 CFU/ml	0.07 mg/L/Hr at 1E06 CFU/ml
% Reduction	66% in 96 Hrs	39% in 96 Hrs

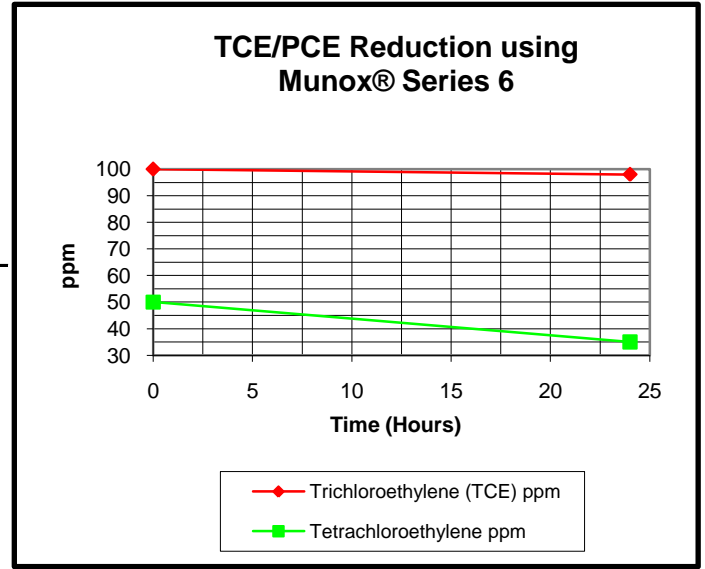


Graph 17

ALIPHATIC CHLORINATED SOLVENTS

Time Hours	Trichloroethylene (TCE) ppm	Tetrachloroethylene ppm
0	100	50
24	98	35

Degradation Rate	0.08 mg/L/Hr at 1E06 CFU/ml	0.64 mg/L/Hr at 1E06 CFU/ml
% Reduction	2% in 24 Hrs	30% in 24 Hrs



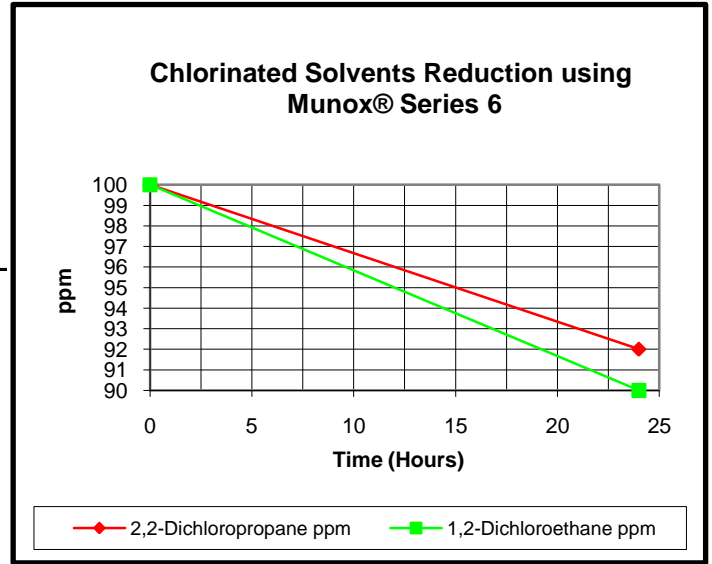
Graph 18

ALIPHATIC CHLORINATED SOLVENTS

Time Hours	2,2-Dichloropropane ppm	1,2-Dichloroethane ppm
0	100	100
24	92	90

Degradation Rate	0.33 mg/L/Hr at 1E06 CFU/ml	0.42 mg/L/Hr at 1E06 CFU/ml
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% Reduction	8% in 24 Hrs	10% in 24 Hrs
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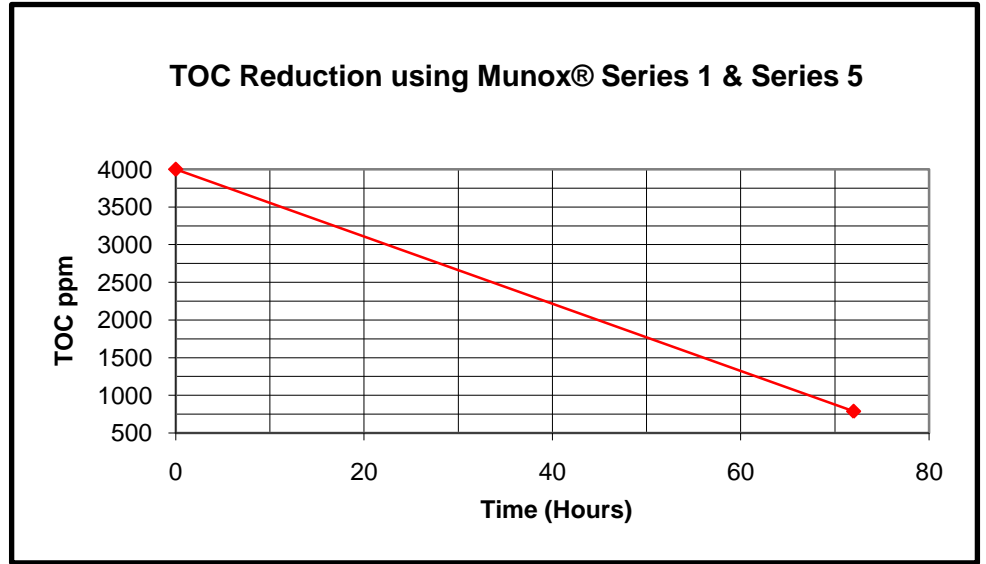
Graph 19

TOTAL ORGANIC CARBON

<u>Time Hours</u>	<u>Paint Wastewater TOC ppm</u>
0	4000
72	790

Degradation Rate 44.58 mg/L/Hr
at 1E06 CFU/ml

% Reduction **80% in 72 Hrs**



Graph 20

INORGANIC COMPOUND

Time Hours	Aerobic Conditions Nitrate-N ppm	Anaerobic Conditions Nitrate-N ppm
0	480	480
24	70	200
Degradation Rate	17.08 mg/L/Hr at 1E07 CFU/ml	11.67 mg/L/Hr at 1E07 CFU/ml
% Reduction	85% in 24 Hrs	58% in 24 Hrs

