

METHOD FOR SIMULTANEOUS DETERMINATION OF FOLPET AND CYMOXANIL ACTIVE INGREDIENTS (COMBINATION PRODUCTS) IN AQUEOUS MEDIA

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Details of Folpet

Common Name : Folpet

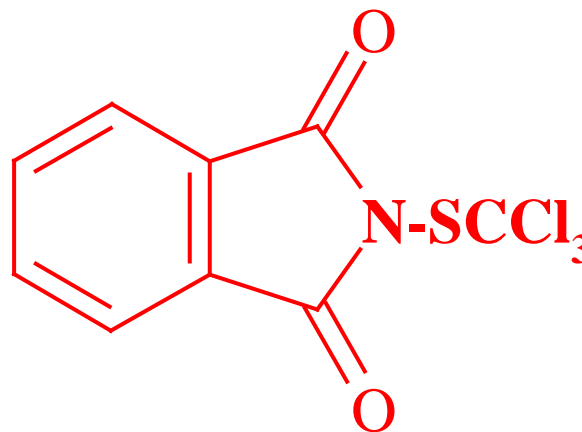
IUPAC Name : N-(trichloromethylthio)phalimide;

N-(trichloromethanesulphenyl)phalimide

CA Name : 2-[(trichloromethyl)thio]-1H-isoindole-1,3(2H)-dione

CAS RN : [133-07-3]

EEC No : 205-088-6



Details of Folpet

Phys-Chemical Properties

Technical	: 92-95%
Molecular Weight	: 296.6
Molecular Formula	: $C_9H_4Cl_3NO_2S$
Form	: Colourless crystals
Melting Point	: 177 °C
S.G./ Density	: 1.72 (20 °C)
Water Solubility	: 0.8 mg/l
Stability	: Stable in dry state. Slowly hydrolysed by moisture at room temperature.
Uses	: Downy mildews, powdery mildews, leaf spot and scab, black rot on fruits and vegetables

Details of Cymoxanil

Common Name : Cymoxanil

IUPAC Name : 1-(2-cyano-2-methoxyiminoacetyl)-3-ethylurea

CA Name : 2-cyano-N-[(ethylamino)carbonyl]-2-(methoxyimino)acetamide

Structure : $\text{CH}_3\text{CH}_2\text{NHCONHCOC}(\text{CN})=\text{NOCH}_3$

CAS RN : [57966-95-7]

EEC No : 261- 043-0

Details of Cymoxanil

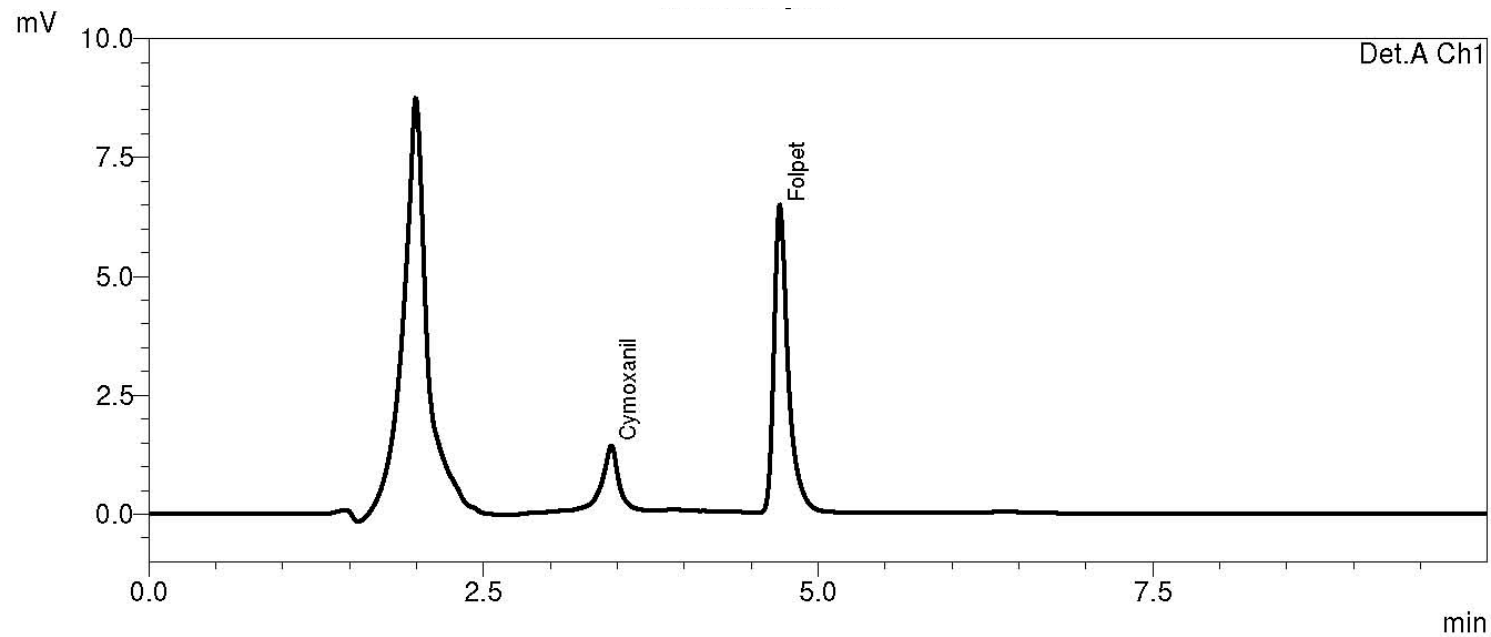
Phys-Chemical Properties

Tech	: >95%
Molecular Weight	: 198.2
Molecular Formula	: $C_7H_{10}N_4O_3$
Form	: Colourless Crystals
Melting Point	: 160-161 °C
S.G./Density	: 1.31 (25 °C)
Water Solubility	: 890 mg/kg
Stability	: DT ₅₀ 148 d (pH 5), 34 h (pH 7) , 31 min (pH 9)
Uses	: Fungicide, Preventive and curative action on fruits and vegetables.

HPLC Condition

Instrument	: HPLC [Shimadzu, LC-2010AHT with LC-Solution software)
Column	: C-18 [250 x 4.6 mm (i.d.) x 5.0 µm particle size]
Wave length	: 235 nm
Flow rate	: 1.0 mL/minute
Injection volume	: 20 µL
Mobile Phase	: Acetonitrile: Milli-Q Water (70:30, v/v)
Auto sampler	: 4 ±2 °C
Retention Time	: Cymoxanil : 3.4 minutes (approx.) Folpet : 4.7 minutes (approx.)

Chromatogram



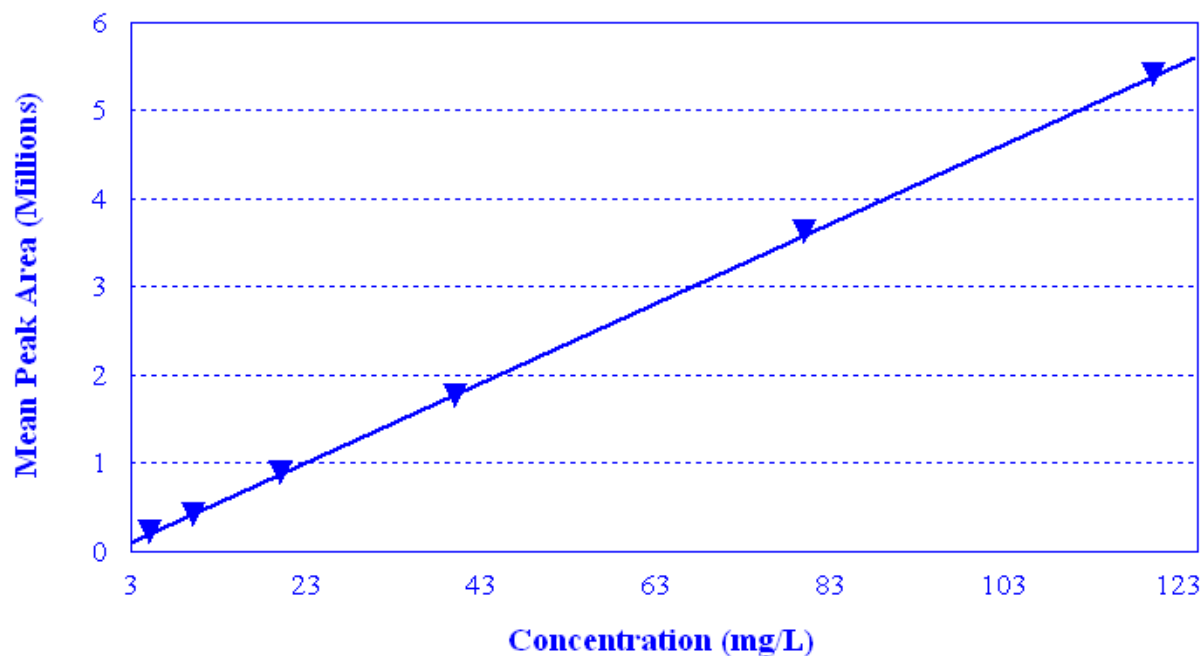
Linear Dynamic Range of Folpet

Purity Determination

Concentration (mg/L)	N° of Injection	Peak Area Count	Area Count	% Variation
5.00	I	209076	209168.5	0.09
	II	209261		
10.01	I	406761	406919	0.08
	II	407077		
20.02	I	873292	873349	0.01
	II	873406		
40.04	I	1749199	1748127	0.12
	II	1747055		
80.08	I	3610860	3608325	0.14
	II	3605790		
120.12	I	5383140	5383257.5	0.00
	II	5383375		

Linear Dynamic Curve of Folpet

Purity Determination



Intercept with y-axis (a) = -34106.34

Slope of the line (b) = 45169.41

Correlation co-efficient or 'r' value = 0.999

Equation : $Y = bX + a$

$Y = 45169.41X + (-34106.34)$

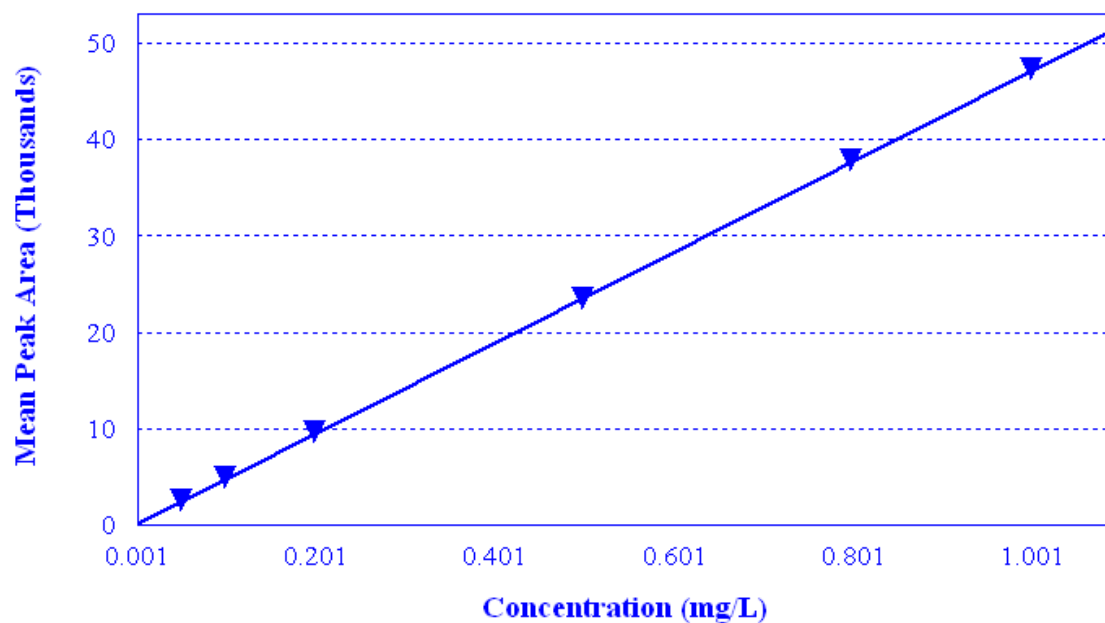
Linear Dynamic Range of Folpet

Tap Water

Concentration (mg/L)	N° of Injection	Peak Area Count	Area Count	% Variation
0.05	I	2408	2421	1.07
	II	2434		
0.10	I	4779	4797.5	0.77
	II	4816		
0.20	I	9584	9607.5	0.49
	II	9631		
0.50	I	23402	23429	0.23
	II	23456		
0.80	I	37820	37757	0.33
	II	37694		
1.00	I	47389	47238.5	0.64
	II	47088		

Linear Dynamic Curve of Folpet

Tap Water



Intercept with y-axis (a) = **74.41**
Slope of the line (b) = **47095.86**
Correlation co-efficient or 'r' value = **0.999**

Equation : $Y = bX + a$
 $Y = 47095.86X + 74.41$

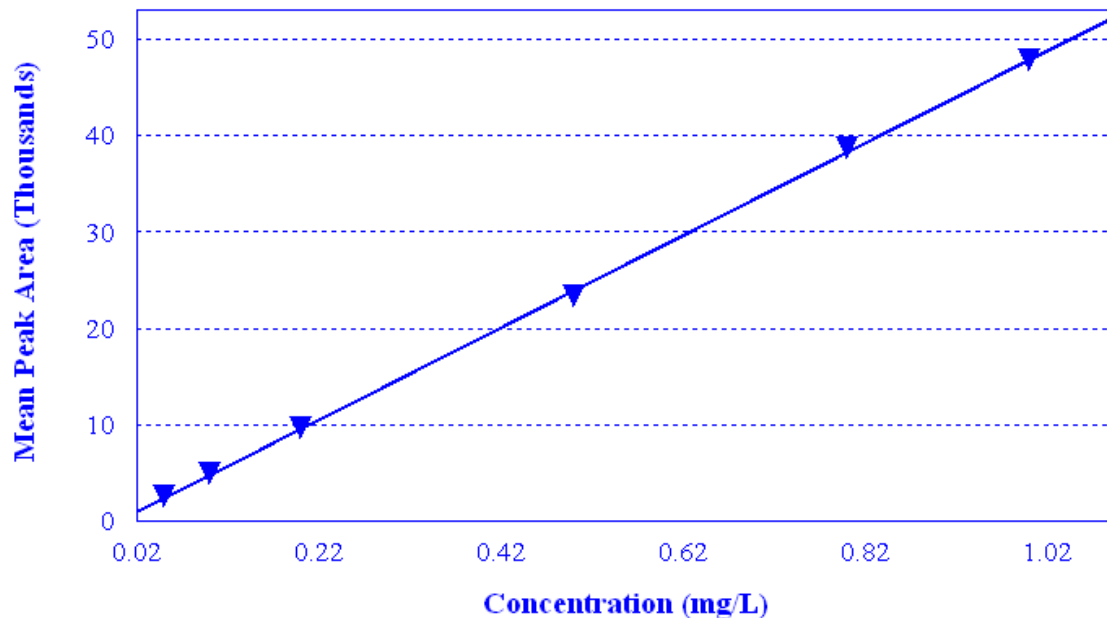
Linear Dynamic Range of Folpet

Reconstituted Water

Concentration (mg/L)	N° of Injection	Peak Area Count	Area Count	% Variation
0.05	I	2482	2479	0.24
	II	2476		
0.10	I	4821	4786	1.45
	II	4751		
0.20	I	9562	9596.5	0.72
	II	9631		
0.50	I	23285	23275	0.09
	II	23265		
0.80	I	38722	38675	0.24
	II	38628		
1.00	I	47807	47809.5	0.01
	II	47812		

Linear Dynamic Curve of Folpet

Reconstituted Water



Intercept with y-axis (a) = -53.35
Slope of the line (b) = 47902.31
Correlation co-efficient or 'r' value = 0.999

Equation : $Y = bX + a$
 $Y = 47902.31X + (-53.35)$

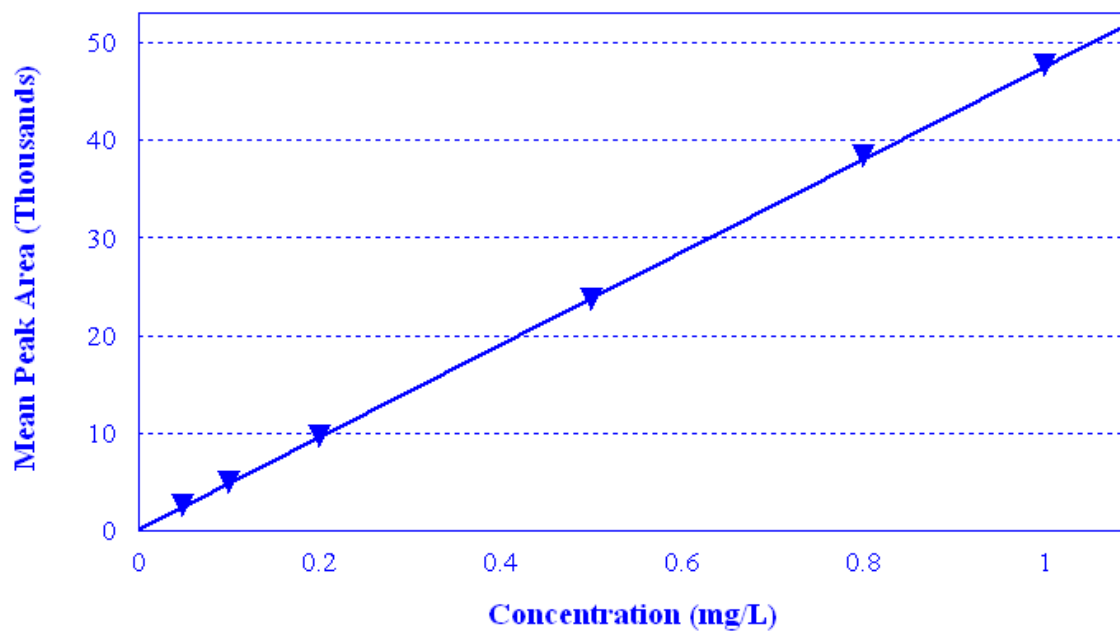
Linear Dynamic Range of Folpet

Algal Media

Concentration (mg/L)	N° of Injection	Peak Area Count	Area Count	% Variation
0.05	I	2462	2456.5	0.45
	II	2451		
0.10	I	4828	4806	0.91
	II	4784		
0.20	I	9583	9573	0.21
	II	9563		
0.50	I	23680	23588	0.78
	II	23496		
0.80	I	38280	38308	0.15
	II	38336		
1.00	I	47589	47517.5	0.30
	II	47446		

Linear Dynamic Curve of Folpet

Algal Media



Intercept with y-axis (a) = **38.31**
Slope of the line (b) = **47554.39**
Correlation co-efficient or 'r' value = **0.999**

Equation : $Y = bX + a$
 $Y = 47554.39X + 38.31$

Limit of Detection (LOD) of Folpet in Tap Water

Solution Concentration (mg/L)	N° of Injection	Peak Area Count	Area	Mean Noise	Signal to Noise Ratio (S/N)	Remark	
0.010	I	448	453.5	262.75	1.73	-	
	II	459					
0.020	I	894	890		262.75	3.39	LOD
	II	886					
0.030	I	1434	1418			262.75	5.4
	II	1402					
N° of Injection of Blank	Total Area of Noise in Blank (a)		N° of Noise in Blank (b)		Average = a/b		
I	513		2		256.50		
II	538		2		269.00		
Average Noise Area of Blank					262.75		

Limit of Detection (LOD) of Folpet in Reconstituted Water

Solution Concentration (mg/L)	N° of Injection	Peak Area Count	Area	Mean Noise	Signal to Noise Ratio (S/N)	Remark	
0.010	I	442	434.0	256.25	1.69	-	
	II	426					
0.020	I	848	851.5		256.25	3.32	LOD
	II	855					
0.030	I	1335	1341.5			256.25	5.24
	II	1348					
N° of Injection of Blank	Total Area of Noise in Blank (a)		N° of Noise in Blank (b)		Average = a/b		
I	523		2		261.50		
II	502		2		251.00		
Average Noise Area of Blank					256.25		

Limit of Detection (LOD) of Folpet in Algal Media

Solution Concentration (mg/L)	N° of Injection	Peak Area Count	Area	Mean Noise	Signal to Noise Ratio (S/N)	Remark
0.010	I	444	451.0	247.75	1.82	-
	II	458				
0.020	I	859	855.5		3.45	LOD
	II	852				
0.030	I	1366	1372.0		5.54	-
	II	1378				
N° of Injection of Blank	Total Area of Noise in Blank (a)		N° of Noise in Blank (b)		Average = a/b	
I	467		2		233.50	
II	524		2		262.00	
Average Noise Area of Blank					247.75	

Limit of Quantitation (LOQ) of Folpet in Tap Water

Solution Concentration (mg/L)	N° of Injection	Peak Area Count	Area	Mean Noise	Signal to Noise Ratio (S/N)	Remark
0.040	I	1847	1849.5	262.72	7.04	-
	II	1852				
0.051	I	2361	2356.5		8.97	-
	II	2352				
0.061	I	2765	2741.5		10.43	LOQ
	II	2718				
N° of Injection of Blank	Total Area of Noise in Blank (a)		N° of Noise in Blank (b)		Average = a/b	
I	513		2		256.50	
II	538		2		269.00	
Average Noise Area of Blank					262.75	

Limit of Quantitation (LOQ) of Folpet in Reconstituted Water

Solution Concentration (mg/L)	N° of Injection	Peak Area Count	Area	Mean Noise	Signal to Noise Ratio (S/N)	Remark		
0.040	I	1814	1805.5	256.25	7.05	-		
	II	1797						
0.051	I	2202	2197		256.25	8.57	-	
	II	2192						
0.061	I	2757	2728			256.25	10.65	LOQ
	II	2699						
N° of Injection of Blank	Total Area of Noise in Blank (a)		N° of Noise in Blank (b)				Average = a/b	
I	523		2				261.50	
II	502		2		251.00			
Average Noise Area of Blank					256.25			

Limit of Quantitation (LOQ) of Folpet in Algal Media

Solution Concentration (mg/L)	N° of Injection	Peak Area Count	Area	Mean Noise	Signal to Noise Ratio (S/N)	Remark		
0.040	I	1821	1815	247.75	7.33	-		
	II	1809						
0.051	I	2209	2204		247.75	8.90	-	
	II	2199						
0.061	I	2720	2715			247.75	10.96	LOQ
	II	2710						
N° of Injection of Blank	Total Area of Noise in Blank (a)		N° of Noise in Blank (b)				Average = a/b	
I	467		2				233.50	
II	524		2		262.00			
Average Noise Area of Blank					247.75			

Precision (% RSD) and Accuracy for Folpet in Tap Water

Fortification Level (mg/L)	Fortified Concentration (mg/L)	Replication	Injection	Peak Area of Sample (Y)	Recovered (mg/L)	Recovery (%)	Mean Concentration (mg/L)	Mean Recovery (%)	Standard Deviation	% RSD
Control	0.0	R1	I	-	ND	-	-	-	-	-
		R2	I	-	ND	-				
LOQ	0.061	R1	I	2650	0.05469	89.66	0.05411	88.70	0.0009	1.66
			II	2634	0.05435	89.10				
		R2	I	2586	0.05333	87.43				
			II	2571	0.05301	86.90				
		R3	I	2635	0.05437	89.13				
			II	2597	0.05356	87.80				
		R4	I	2578	0.05316	87.15				
			II	2605	0.05373	88.08				
		R5	I	2693	0.0556	91.15				
			II	2678	0.05528	90.62				
10 x LOQ	0.61	R1	I	25740	0.54496	89.34	0.52333	85.79	0.01155	2.21
			II	25488	0.53961	88.46				
		R2	I	24975	0.52872	86.68				
			II	24655	0.52193	85.56				
		R3	I	24814	0.5253	86.11				
			II	24561	0.51993	85.23				
		R4	I	24229	0.51288	84.08				
			II	24343	0.5153	84.48				
		R5	I	24275	0.51386	84.24				
			II	24130	0.51078	83.73				

Precision (% RSD) and Accuracy for Folpet in Reconstituted Water

Fortification Level (mg/L)	Fortified Concentration (mg/L)	Replication	Injection	Peak Area of Sample (Y)	Recovered (mg/L)	Recovery (%)	Mean Concentration (mg/L)	Mean Recovery (%)	Standard Deviation	% RSD
Control	0.0	R1	I	-	ND	-	-	-	-	-
		R2	I	-	ND	-				
LOQ	0.061	R1	I	2510	0.05351	87.72	0.054	88.52	0.00092	1.70
			II	2518	0.05368	88.00				
		R2	I	2475	0.05278	86.52				
			II	2464	0.05255	86.15				
		R3	I	2525	0.05383	88.25				
			II	2541	0.05416	88.79				
		R4	I	2607	0.05554	91.05				
			II	2570	0.05476	89.77				
		R5	I	2550	0.05435	89.10				
			II	2571	0.05479	89.82				
10 x LOQ	0.61	R1	I	25356	0.53044	86.96	0.52525	86.11	0.00466	0.89
			II	25283	0.52892	86.71				
		R2	I	24678	0.51629	84.64				
			II	24942	0.5218	85.54				
		R3	I	25214	0.52748	86.47				
			II	25426	0.5319	87.2				
		R4	I	25089	0.52487	86.04				
			II	25117	0.52545	86.14				
		R5	I	24963	0.52224	85.61				
			II	25006	0.52313	85.76				

Precision (% RSD) and Accuracy for Folpet in Algal Media

Fortification Level (mg/L)	Fortified Concentration (mg/L)	Replication	Injection	Peak Area of Sample (Y)	Recovered (mg/L)	Recovery (%)	Mean Concentration (mg/L)	Mean Recovery (%)	Standard Deviation	% RSD
Control	0.0	R1	I	-	ND	-	-	-	-	-
		R2	I	-	ND	-				
LOQ	0.061	R1	I	2535	0.0525	86.07	0.0534	87.55	0.00112	2.10
			II	2558	0.05299	86.87				
		R2	I	2527	0.05233	85.79				
			II	2545	0.05271	86.41				
		R3	I	2635	0.0546	89.51				
			II	2670	0.05534	90.72				
		R4	I	2557	0.05296	86.82				
			II	2515	0.05208	85.38				
		R5	I	2612	0.05412	88.72				
			II	2627	0.05444	89.25				
10 x LOQ	0.61	R1	I	26042	0.54682	89.64	0.5327	87.33	0.00942	1.77
			II	25939	0.54465	89.29				
		R2	I	24874	0.52226	85.62				
			II	24803	0.52077	85.37				
		R3	I	25842	0.54261	88.95				
			II	25457	0.53452	87.63				
		R4	I	24953	0.52392	85.89				
			II	25268	0.53054	86.97				
		R5	I	25396	0.53324	87.42				
			II	25146	0.53798	86.55				

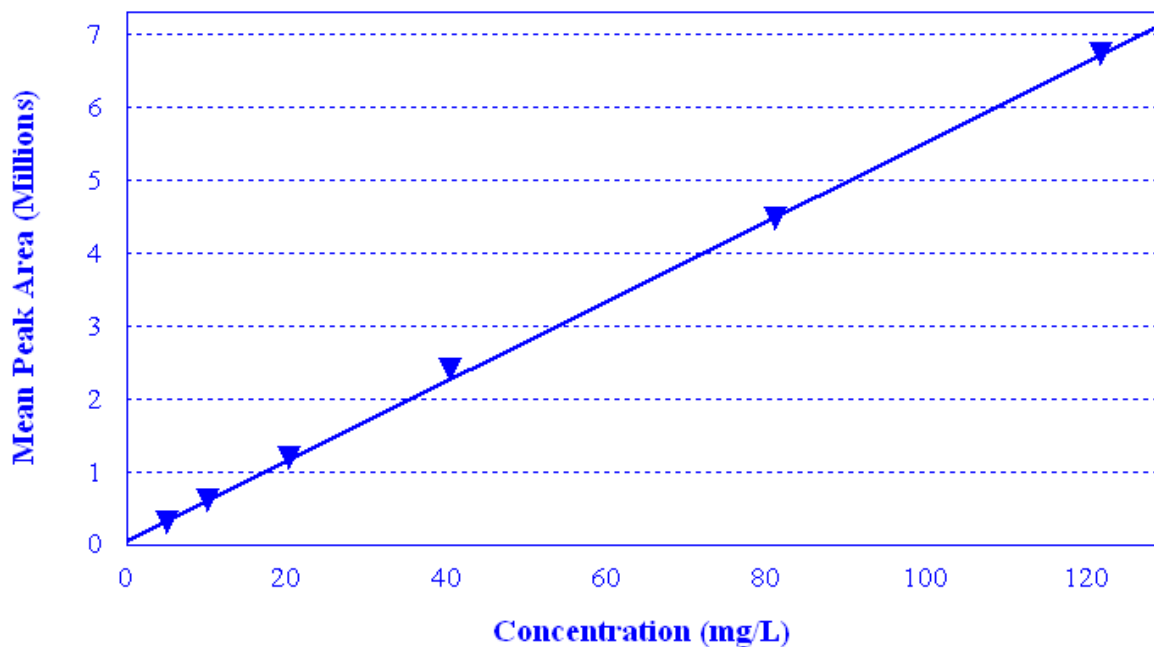
Linear Dynamic Range of Cymoxanil

Purity Determination

Concentration (mg/L)	N° of Injection	Peak Area Count	Area Count	% Variation
5.08	I	284610	284832	0.16
	II	285054		
10.16	I	572309	572589.5	0.10
	II	572870		
20.31	I	1166718	1166830.5	0.02
	II	1166943		
40.63	I	2367404	2366312	0.09
	II	2365220		
81.26	I	4449346	4443894	0.25
	II	4438442		
121.89	I	6717296	6714787.5	0.07
	II	6712279		

Linear Dynamic Curve of Cymoxanil

Purity Determination



Intercept with y-axis (a) = **43602.95**
Slope of the line (b) = **54729.63**
Correlation co-efficient or 'r' value = **0.999**

Equation : $Y = bX + a$
 $Y = 54729.63X + 43602.95$

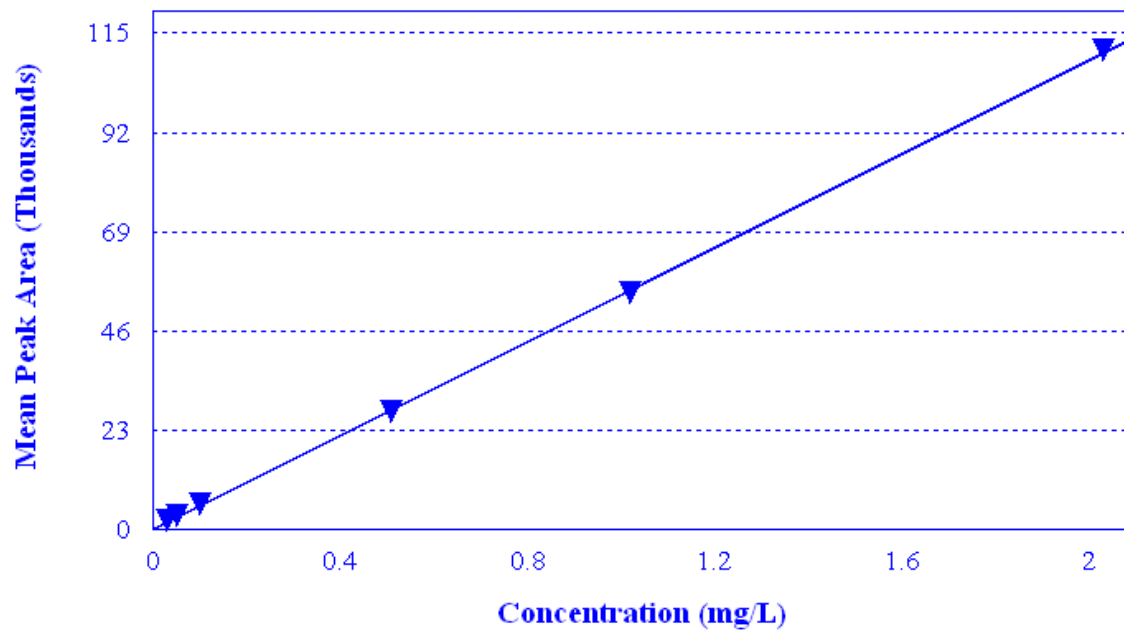
Linear Dynamic Range of Cymoxanil

Tap Water

Concentration (mg/L)	N° of Injection	Peak Area Count	Area Count	% Variation
0.03	I	1856	1869	1.38
	II	1882		
0.051	I	3066	3076	0.65
	II	3086		
0.10	I	5920	5914	0.20
	II	5908		
0.51	I	27333	27358.5	0.19
	II	27384		
1.02	I	54484	54510	0.10
	II	54536		
2.03	I	110948	110910.5	0.07
	II	110873		

Linear Dynamic Curve of Cymoxanil

Tap Water



Intercept with y-axis (a) = 67.99
Slope of the line (b) = 54325.07
Correlation co-efficient or 'r' value = 0.999

Equation : $Y = bX + a$
 $Y = 54325.07X + 67.99$

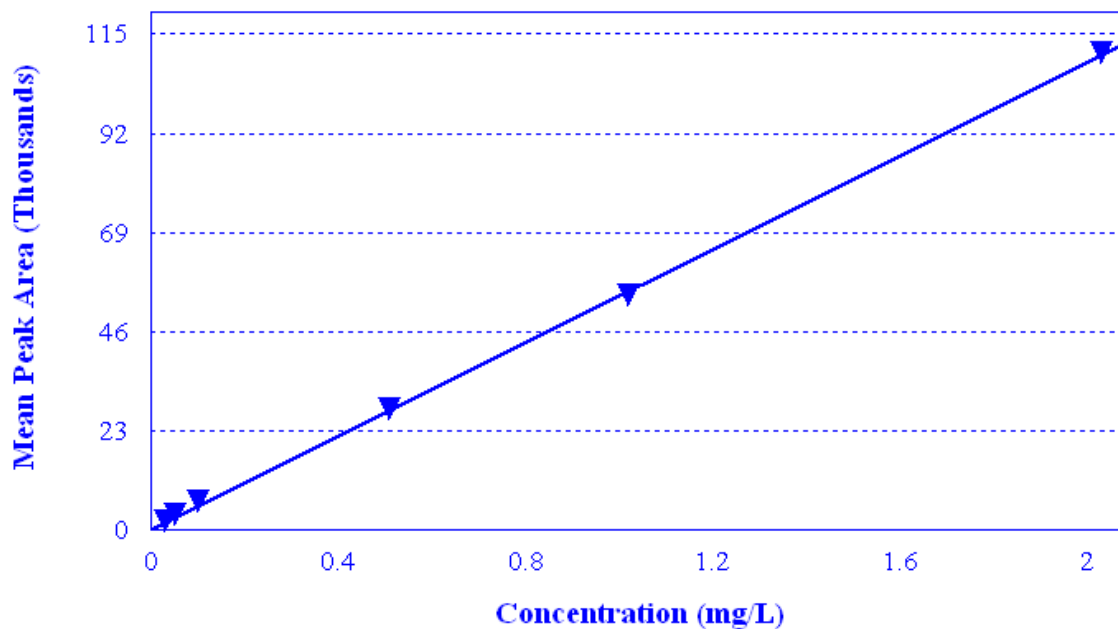
Linear Dynamic Range of Cymoxanil

Reconstituted Water

Concentration (mg/L)	N° of Injection	Peak Area Count	Area Count	% Variation
0.03	I	1891	1873.5	1.85
	II	1856		
0.051	I	3173	3158	0.95
	II	3143		
0.10	I	6257	6227	0.96
	II	6197		
0.51	I	27400	27469.5	0.50
	II	27539		
1.02	I	54235	54204	0.11
	II	54173		
2.03	I	110449	110622.5	0.31
	II	110796		

Linear Dynamic Curve of Cymoxanil

Reconstituted Water



Intercept with y-axis (a) = 205.30
Slope of the line (b) = 54082.52
Correlation co-efficient or 'r' value = 0.999

Equation : $Y = bX + a$
 $Y = 54082.52X + 205.30$

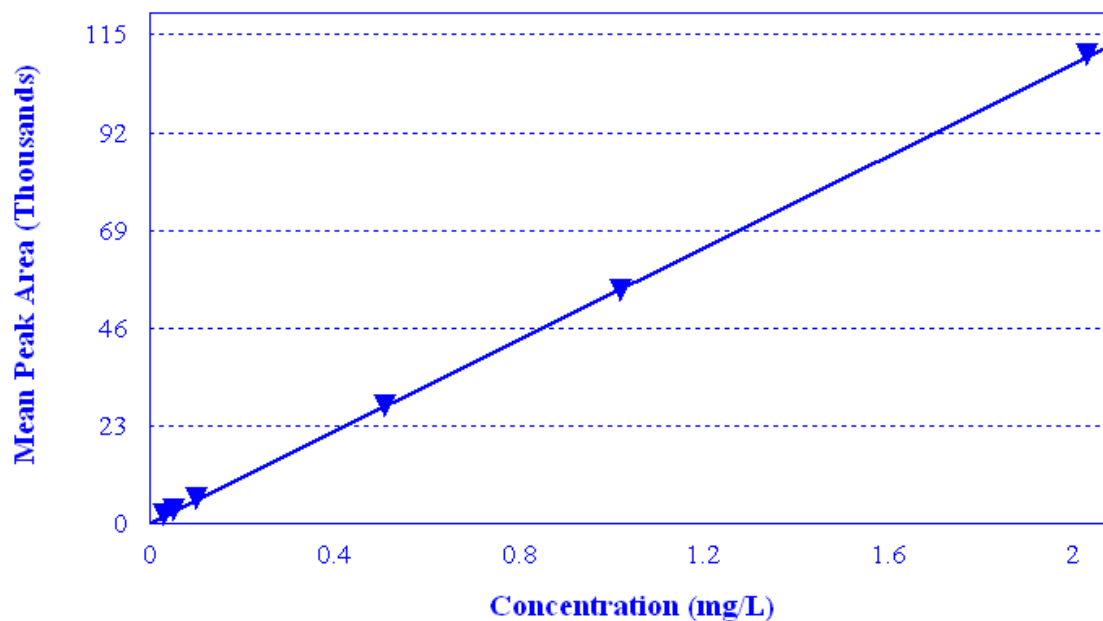
Linear Dynamic Range of Cymoxanil

Algal Media

Concentration (mg/L)	N° of Injection	Peak Area Count	Area Count	% Variation
0.03	I	1852	1862.5	1.12
	II	1873		
0.051	I	3063	3048.5	0.95
	II	3034		
0.10	I	5902	5921.5	0.66
	II	5941		
0.51	I	27462	27591	0.93
	II	27720		
1.02	I	54455	54499	0.16
	II	54543		
2.03	I	110118	110183	0.12
	II	110248		

Linear Dynamic Curve of Cymoxanil

Algal Media



Intercept with y-axis (a) = 187.91
 Slope of the line (b) = 53990.39
 Correlation co-efficient or 'r' value = 0.999

Equation : $Y = bX + a$
 $Y = 53990.39X + 187.91$

Limit of Detection (LOD) of Cymoxanil in Tap Water

Solution Concentration (mg/L)	N° of Injection	Peak Area Count	Area	Mean Noise	Signal to Noise Ratio (S/N)	Remark	
0.005	I	354	328.0	204.25	1.61	-	
	II	302					
0.010	I	703	697.0		204.25	3.41	LOD
	II	691					
0.020	I	1321	1276.5			204.25	6.25
	II	1232					
N° of Injection of Blank	Total Area of Noise in Blank (a)		N° of Noise in Blank (b)		Average = a/b		
I	383.0		2		191.50		
II	434.0		2		217.00		
Average Noise Area of Blank					204.25		

Limit of Detection (LOD) of Cymoxanil in Reconstituted Water

Solution Concentration (mg/L)	N° of Injection	Peak Area Count	Area	Mean Noise	Signal to Noise Ratio (S/N)	Remark
0.005	I	442	424.5	216.25	1.96	-
	II	407				
0.010	I	725	682.5		3.16	LOD
	II	640				
0.020	I	1245	1232.5		5.70	-
	II	1220				
N° of Injection of Blank	Total Area of Noise in Blank (a)		N° of Noise in Blank (b)		Average = a/b	
I	441		2		220.50	
II	424		2		212.00	
Average Noise Area of Blank					216.25	

Limit of Detection (LOD) of Cymoxanil in Algal Media

Solution Concentration (mg/L)	N° of Injection	Peak Area Count	Area	Mean Noise	Signal to Noise Ratio (S/N)	Remark	
0.005	I	424	388	204.5	1.90	-	
	II	352					
0.010	I	698	702		204.5	3.43	LOD
	II	706					
0.020	I	1300	1287			204.5	6.29
	II	1274					
N° of Injection of Blank	Total Area of Noise in Blank (a)		N° of Noise in Blank (b)		Average = a/b		
I	434		2		217.0		
II	384		2		192.0		
Average Noise Area of Blank					204.5		

Limit of Quantitation (LOQ) of Cymoxanil in Tap Water

Solution Concentration (mg/L)	N° of Injection	Peak Area Count	Area	Mean Noise	Signal to Noise Ratio (S/N)	Remark		
0.021	I	1289	1300.5	227.25	5.72	-		
	II	1312						
0.031	I	2152	2140.0		227.25	9.42	-	
	II	2128						
0.041	I	2823	2829.5			227.25	12.45	LOQ
	II	2836						
N° of Injection of Blank	Total Area of Noise in Blank (a)		N° of Noise in Blank (b)				Average = a/b	
I	460		2				230.00	
II	449		2		224.50			
Average Noise Area of Blank					227.25			

Limit of Quantitation (LOQ) of Cymoxanil in Reconstituted Water

Solution Concentration (mg/L)	N° of Injection	Peak Area Count	Area	Mean Noise	Signal to Noise Ratio (S/N)	Remark		
0.021	I	1352	1322.0	223.25	5.92	-		
	II	1292						
0.031	I	2167	2175.5		223.25	9.74	-	
	II	2184						
0.041	I	2844	2837.5			223.25	12.71	LOQ
	II	2831						
N° of Injection of Blank	Total Area of Noise in Blank (a)		N° of Noise in Blank (b)				Average = a/b	
I	445		2				222.50	
II	448		2		224.00			
Average Noise Area of Blank					223.25			

Limit of Quantitation (LOQ) of Cymoxanil in Algal Media

Solution Concentration (mg/L)	N° of Injection	Peak Area Count	Area	Mean Noise	Signal to Noise Ratio (S/N)	Remark		
0.021	I	1111	1145.5	219.25	5.22	-		
	II	1180						
0.031	I	2126	2142.0		219.25	9.77	-	
	II	2158						
0.041	I	2778	2832.5			219.25	12.92	LOQ
	II	2887						
N° of Injection of Blank	Total Area of Noise in Blank (a)		N° of Noise in Blank (b)				Average = a/b	
I	441		2				220.50	
II	436		2		218.00			
Average Noise Area of Blank					219.25			

Precision (% RSD) and Accuracy for Cymoxanil in Tap Water

Fortification Level (mg/L)	Fortified Concentration (mg/L)	Replication	Injection	Peak Area of Sample (Y)	Recovered (mg/L)	Recovery (%)	Mean Concentration (mg/L)	Mean Recovery (%)	Standard Deviation	% RSD
Control	0.0	R1	I	-	ND	-	-	-	-	-
		R2	I	-	ND	-				
LOQ	0.041	R1	I	2259	0.04033	98.37	0.04083	99.59	0.00095	2.33
			II	2249	0.04015	97.93				
		R2	I	2349	0.04199	102.41				
			II	2332	0.04168	101.66				
		R3	I	2371	0.04239	103.39				
			II	2300	0.04109	100.22				
		R4	I	2217	0.03956	96.49				
			II	2230	0.03980	97.07				
		R5	I	2271	0.04055	98.90				
			II	2283	0.04077	99.44				
10 x LOQ	0.41	R1	I	21945	0.40271	98.22	0.40312	98.32	0.00716	1.78
			II	21757	0.39924	97.38				
		R2	I	22372	0.41057	100.14				
			II	22624	0.41520	101.27				
		R3	I	21622	0.39676	96.77				
			II	21373	0.39218	95.65				
		R4	I	21887	0.40164	97.96				
			II	21725	0.39866	97.23				
		R5	I	22395	0.41099	100.24				
			II	21977	0.40329	98.36				

Precision (% RSD) and Accuracy for Cymoxanil in Reconstituted Water

Fortification Level (mg/L)	Fortified Concentration (mg/L)	Replication	Injection	Peak Area of Sample (Y)	Recovered (mg/L)	Recovery (%)	Mean Concentration (mg/L)	Mean Recovery (%)	Standard Deviation	% RSD
Control	0.0	R1	I	-	ND	-	-	-	-	-
		R2	I	-	ND	-				
LOQ	0.041	R1	I	2376	0.04014	97.90	0.04065	99.13	0.00091	2.24
			II	2381	0.04023	98.12				
		R2	I	2487	0.04219	102.90				
			II	2464	0.04176	101.85				
		R3	I	2327	0.03923	95.68				
			II	2348	0.03962	96.63				
		R4	I	2433	0.04119	100.46				
			II	2413	0.04082	99.56				
		R5	I	2394	0.04047	98.71				
			II	2412	0.04080	99.51				
10 x LOQ	0.41	R1	I	22135	0.40549	98.9	0.3998	97.51	0.00799	2.00
			II	22300	0.40854	99.64				
		R2	I	21485	0.39347	95.97				
			II	21547	0.39461	96.25				
		R3	I	22234	0.40732	99.35				
			II	22079	0.40445	98.65				
		R4	I	21363	0.39121	95.42				
			II	21036	0.38517	93.94				
		R5	I	22041	0.40375	98.48				
			II	22055	0.40401	98.54				

Precision (% RSD) and Accuracy for Cymoxanil in Algal Media

Fortification Level (mg/L)	Fortified Concentration (mg/L)	Replication	Injection	Peak Area of Sample (Y)	Recovered (mg/L)	Recovery (%)	Mean Concentration (mg/L)	Mean Recovery (%)	Standard Deviation	% RSD
Control	0.0	R1	I	-	ND	-	-	-	-	-
		R2	I	-	ND	-				
LOQ	0.041	R1	I	2300	0.03912	95.41	0.0388	94.72	0.0012	3.09
			II	2333	0.03973	96.90				
		R2	I	2204	0.03734	91.07				
			II	2220	0.03764	91.80				
		R3	I	2381	0.04062	99.07				
			II	2367	0.04036	98.44				
		R4	I	2282	0.03879	94.61				
			II	2310	0.0393	95.85				
		R5	I	2206	0.03738	91.17				
			II	2244	0.03808	92.88				
10 x LOQ	0.41	R1	I	21372	0.39237	95.70	0.3946	96.24	0.00842	2.13
			II	21440	0.39363	96.01				
		R2	I	22084	0.40556	98.92				
			II	22125	0.40631	99.10				
		R3	I	21209	0.38935	94.96				
			II	21526	0.39522	96.40				
		R4	I	21806	0.40041	97.66				
			II	21644	0.39741	96.93				
		R5	I	21045	0.38631	94.22				
			II	20662	0.37922	92.49				

Summary - Folpet

Parameters		Results		
Test Media		Tap Water	Reconstituted Water	Algal Medium
Specificity (Non-analyte Interference)		No interference	No interference	No interference
Linear (LDR)	Concentration Range (mg/L)	0.05 to 1.00	0.05 to 1.00	0.05 to 1.00
	Intercept (a)	74.41	-53.35	38.31
	Slope of the line (b)	47095.86	47902.31	47554.39
	Correlation Coefficient (r)	0.999	0.999	0.999
Limit of Detection (LOD) [mg/L]		0.02	0.02	0.02
Limit of Quantitation (LOQ) [mg/L]		0.061	0.061	0.061
Precision (% RSD)	Fortification Level			
	LOQ	1.66	1.70	2.10
	% RSD [Horwitz equation]	16.33	16.33	16.33
	10 x LOQ	2.21	0.89	1.77
	% RSD [Horwitz equation]	11.55	11.55	11.55
Accuracy (Recovery %)	LOQ	88.70	88.52	87.55
	10 x LOQ	85.79	86.11	87.33

Summary - Cymoxanil

Parameters		Results		
Test Media		Tap Water	Reconstituted Water	Algal Medium
Specificity (Non-analyte Interference)		No interference	No interference	No interference
Linear (LDR)	Concentration Range (mg/L)	0.03 to 2.03	0.03 to 2.03	0.03 to 2.03
	Intercept (a)	67.99	205.3	187.91
	Slope of the line (b)	54325.07	54082.52	53990.39
	Correlation Coefficient (r)	0.999	0.999	0.999
Limit of Detection (LOD) [mg/L]		0.01	0.01	0.01
Limit of Quantitation (LOQ) [mg/L]		0.041	0.041	0.041
Precision (% RSD)	Fortification Level			
	LOQ	2.33	2.24	3.09
	% RSD [Horwitz equation]	17.34	17.34	17.34
	10 x LOQ	1.78	2.00	2.13
	% RSD [Horwitz equation]	12.26	12.26	12.26
Accuracy (Recovery %)	LOQ	99.59	99.13	94.72
	10 x LOQ	98.32	97.51	96.24

Conclusion

From the results of the validation it is concluded that the method is sensitive and precise for the analysis of active ingredient content concentrations of Folpet, Cymoxanil and Fosetyl-Al in test media. The results of validation criteria are within the guidelines (SANCO/3029/99 rev.4 and U.S. EPA OPPTS 860.1340) specified limit.



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Thank You