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APPENDIX A

APPENDIX A

Pesticides Exposure Questionnaire

Description

This questionnaire is combined with open and close questions and consisted with 4 parts as following:

Part 1: General Information; to ask about general and personal background of the farmers.

Part 2: Health Information; to assess farmer's health problems, which may be causes from exposure with organophosphate pesticide, including some related signs and symptoms.

Part 3: Pesticide Exposure Assessment; it contains with 26 items for assess farmer's behaviors and their activities related with pesticide exposure. Each item consists with ranking score for evaluation of each behavior's content.

Part 4: IPM Information, this part is especially designed for IPM farmers only, in order to evaluate the alternative method that they have been use for pest control.

Questionnaire Manual

Part 3 is the major part, which used to assess the pesticide exposure. In each item of this part, there are the ranking score that determined for assessing the behavior which related to the pesticide exposure (the score in each item is shown at the the end of answer choice).

The maximum score in this part is 92 points while the minimum is 22 points. The scores from the calculation can be assessed the exposure level by comparing with the following criteria. The researcher assigned and calculated the pesticide exposure score into 5 levels by categorizing the scores in the following standard

Level	Exposure Score (point)	Description
1	22 – 36	Low Exposure
2	37 – 50	Moderately Low Exposure
3	51 – 64	Medium Exposure
4	65 – 78	Moderately High Exposure
5	79 – 92	High Exposure

Officer

Part 2 Health Information

1. Have you ever had blood examination for pesticides residues test?

- () 1. Yes, Result is _____ () 2. No

2. During 1 month, do you have any sign or symptom?

Score	(0)	(1)	(2)	(3)	(4)	(5)
Advers effect	None	Mild but occasional	Mild but frequent	Moderate but occasional	Moderate but frequent	Severe
1. Headache, Vomiting						
2. Abdomen cramp, Vomiting						
3. Muscle seizure						
4. Muscle weakness, Numbness						
5. Blurring vision, Tearing						
6. Chess pain, Difficult breathing						
7. Loss consciousness						

Officer

3. Do you know, what the causes of that sign and symptoms are?

- () 1. Yes () 2. No

4. If you experience those symptoms, do you know the names of such pesticides?

Part 3 Pesticides Exposure Assessment

1. Where do you apply pesticides?

- () 1. Near the home (5)
- () 2. Near the water source (4)
- () 3. In the farm and near the water source (3)
- () 4. Near the farm which use only for growing (2)
- () 5. In the farm but far from the water source (1)

2. What is the method that you select for apply pesticide?

- () 1. Mix less than the instruction (1)
- () 2. Follow the instruction (2)
- () 3. Mix more than the instruction (3)
- () 4. Follow the neighborhood's suggest (4)
- () 5. Mix with the individual decision (Mix more than one type of pesticide) (5)

3. How do you mix the pesticides?

- () 1. By wearing rubber gloves and using stirring stick (1)
- () 2. By wearing fabric gloves and using stirring stick (2)
- () 3. By using hand and stirring stick (3)
- () 4. By hand only (4)

			Officer
4. When mixing or applying pesticides, which part of your body usually contact the pesticides? (Check all that apply)			
<input type="checkbox"/> 1. No part of my body		(0/1)	
<input type="checkbox"/> 2. Hands and arms		(0/1)	
<input type="checkbox"/> 3. Legs		(0/1)	
<input type="checkbox"/> 4. Face		(0/1)	
<input type="checkbox"/> 5. Body		(0/1)	
5. When do you spray pesticides?		(No score)	
<input type="checkbox"/> 1. Early morning			
<input type="checkbox"/> 2. Evening			
<input type="checkbox"/> 3. At noon			
<input type="checkbox"/> 4. Depending on sprayer			
6. What type of protective equipment do you usually use when you mix and apply pesticides? (Check all that apply)			
<input type="checkbox"/> 1. None		(0)	
<input type="checkbox"/> 2. Chemical protective mask		(-2)	
<input type="checkbox"/> 3. Normal mask or clothing mask		(-1)	
<input type="checkbox"/> 4. Knitting faces hat		(-1)	
<input type="checkbox"/> 5. Loincloth		(-1)	
<input type="checkbox"/> 6. Sun hat		(-1)	
<input type="checkbox"/> 7. Goggle or glasses		(-2)	
<input type="checkbox"/> 8. Chemical resistant gloves		(-2)	
<input type="checkbox"/> 9. Fabric or Leather gloves		(-1)	
<input type="checkbox"/> 10. Rubber Boots		(-2)	
<input type="checkbox"/> 11. Shorts and shirt		(+2)	
<input type="checkbox"/> 12. Long pant and shirt		(-2)	
<input type="checkbox"/> 13. Other _____			
7. What equipment do you use for spraying pesticides?			
<input type="checkbox"/> 1. Hand Pump		(2)	
<input type="checkbox"/> 2. Motor Pump		(4)	
<input type="checkbox"/> 3. Portable Motor		(3)	
<input type="checkbox"/> 4. Both		(3)	
<input type="checkbox"/> 5. Other _____			
8. If you spill some of pesticide on your clothes early in the day, when do you change clothes?			
<input type="checkbox"/> 1. Right away		(1)	
<input type="checkbox"/> 2. Change after finishing spraying		(2)	
<input type="checkbox"/> 3. At lunch		(3)	
<input type="checkbox"/> 4. At the end of working day		(4)	
<input type="checkbox"/> 5. At the end of the next working day		(5)	

	Officer
<p>9. If your last pesticides application is ineffective, what will you do with the first pest control?</p> <p>() 1. Change the new one (2)</p> <p>() 2. Mix higher dose pesticides (3)</p> <p>() 3. Mix more than one type of pesticides (4)</p> <p>() 4. Spray again in the same concentration (2)</p> <p>() 5. Liberate (1)</p> <p>() 6. Other _____</p>	
<p>10. After applying pesticides, when do you usually change into clean clothes?</p> <p>() 1. Immediately (1)</p> <p>() 2. At lunch (2)</p> <p>() 3. At the end of that working day (3)</p> <p>() 4. At the end of the next working day (4)</p> <p>() 5. Later in the week (5)</p>	
<p>11. In your household, how do you wash your clothes, you wore during applying pesticide?</p> <p>() 1. Wash separated from family's clothes (1)</p> <p>() 2. Rinse separately then wash with family's clothes (2)</p> <p>() 3. Wash with family's clothes (3)</p>	
<p>12. After mixing or applying pesticides, where do you usually wash up or shower?</p> <p>() 1. Bathroom at home (2)</p> <p>() 2. Outside shower or well (1)</p>	
<p>13. What is the method in disposing the pesticides container?</p> <p>() 1. Dispose on the ground (5)</p> <p>() 2. Collect for the individual landfill (4)</p> <p>() 3. Dispose in the hole (1)</p> <p>() 4. Dispose to the natural water source (6)</p> <p>() 5. Dispose with the sanitary waste (2)</p> <p>() 6. Burn (3)</p>	
<p>14. How often do you washing the pesticide equipment after using?</p> <p>() 1. Not at all (1)</p> <p>() 2. Occasionally wash (2)</p> <p>() 3. Frequently (3)</p>	
<p>15. What is the method for washing the pesticide equipment?</p> <p>() 1. Clean nozzle only (1)</p> <p>() 2. Rinse tank (2)</p> <p>() 3. Hose down sprayer with water (3)</p>	
<p>16. Do you usually repair your own spraying or mixing equipment?</p> <p>() 1. Yes (3)</p> <p>() 2. Occasionally (2)</p> <p>() 3. No (1)</p>	

		Officer
17. Where do you store the pesticides?		
<input type="checkbox"/> 1. At home	(3)	
<input type="checkbox"/> 2. Home's area or in the farm	(2)	
<input type="checkbox"/> 3. In the separate storage facility	(1)	
<input type="checkbox"/> 4. Other _____		
18. Where is the source of water used?		
<input type="checkbox"/> 1. Artesian well or deep well	(1)	
<input type="checkbox"/> 2. Water pond	(3)	
<input type="checkbox"/> 3. Rain fall	(2)	
<input type="checkbox"/> 4. Tap Water	(0)	
19. Normally, what kind of drinking water do you usually drink?		
<input type="checkbox"/> 1. Rain fall (directly)	(5)	
<input type="checkbox"/> 2. Shallow well	(6)	
<input type="checkbox"/> 3. Artesian well (directly)	(4)	
<input type="checkbox"/> 4. Boiled artesian well	(2)	
<input type="checkbox"/> 5. Filtered artesian well	(3)	
<input type="checkbox"/> 6. Bottled drinking water	(1)	
20. Whether the water source used for consuming is the same source for mixing pesticides?		
<input type="checkbox"/> 1. The same source	(2)	
<input type="checkbox"/> 2. Different source	(1)	
21. How far is your usage well from the nearest area where pesticides are mixed?		
<input type="checkbox"/> 1. Less than 10 m.	(3)	
<input type="checkbox"/> 2. Between 10-50 m.	(2)	
<input type="checkbox"/> 3. More than 50 m.	(1)	
22. Where do you have lunch?		
<input type="checkbox"/> 1. At home (located outside the farm)	(1)	
<input type="checkbox"/> 2. In the farm (Including the home that located in the farm)	(2)	
23. Do you smoke cigarette or tobacco ?		
<input type="checkbox"/> 1. Yes, I smoke Cigarette for _____ years	(No score)	
<input type="checkbox"/> 2. Yes, I smoke Tobacco for _____ years		
<input type="checkbox"/> 3. No.		
24. Now, do you still smoke?		
<input type="checkbox"/> 1. Yes, about _____ cigarettes	(2)	
<input type="checkbox"/> 2. No	(1)	
25. Do you smoke while working in the farm?		
<input type="checkbox"/> 1. Yes, about _____ cigarettes	(2)	
<input type="checkbox"/> 2. No	(1)	
26. While you are in the farm or during your lunch?		
<input type="checkbox"/> 1. Always	(3)	
<input type="checkbox"/> 2. Sometimes	(2)	
<input type="checkbox"/> 3. None	(1)	

Officer

Part 4 IPM Farmer Information

1. How many years do you initial change to use the IPM program? _____ years

2. What is the method you use to control the pest apart from pesticides applying? (Check all that apply)

() 1. Use the bio-substance for example: the fermentation juice from Sherry Shell, Margosa juice, Bacteria GM-1, and etc.

() 2. Use the bio-control for example: insects eating bird, predator and parasite

() 3. Grow some plants, which protect themselves for pest.

() 4. Crop rotation

() 5. Grow in the net area

() 6. Multi-various techniques

() 7. None, use natural control

() 8. Other _____

3. Before you spray pesticides, how do you determine when to spray?

() 1. First signs of problems or pest

() 2. When the pest population warrants it

() 3. Calendar

() 4. Pest experience with a particular pest.

APPENDIX B

Appendix B-1

GC-NPD Condition for Chloryrifos

HP6890 GC Method

Oven Initial temp: 100°C Maximum temp: 325°C
 Initial time: 0.50 min Equilibration time: 1.00 min

Ramps:

#	Rate	Final temp	Final time
1	60.0	245	1.17
2	10.0	265	0.91
3	0.0(off)		

Post temp 300°C

Post time: 1.00 min

Run time: 7.00 min

Back Inlet (Split/Splitless)

Mode: Splitless
 Initial temp: 250°C (on)
 Pressure: 10.48 psi
 Purge flow: 3.9 ml/min
 Purge time: 0.75 ml/min
 Total flow: 8.3 ml/min
 Gas saver: Off
 Gas type: Helium

Back Detector (NPD)

Temperature: 300°C (on)
 Hydrogen flow: On
 Air flow: On
 Makeup flow: On
 Makeup Gas Type: Helium
 Adjust offset: 50.00
 Electrometer: On
 Bead: On
 Equilibration time: 1.00 min

Appendix B-2

Calibration Curve of Chloryrifos

Method D:\VIRIST~1\METHOD\CHLOPY~1.M\NCHSTD.M

=====
 Calibration Table
 =====

Calib. Data Modified : Sunday, February 09, 2003 12:03:57 PM

Calculate : External Standard
 Based on : Peak Area

Rel. Reference Window : 5.000 %
 Abs. Reference Window : 0.000 min
 Rel. Non-ref. Window : 5.000 %
 Abs. Non-ref. Window : 0.000 min
 Multiplier : 0.9850
 Dilution : 1.0000
 Sample Amount : 0.00000
 Uncalibrated Peaks : not reported
 Partial Calibration : Yes, identified peaks are recalibrated
 Correct All Ret. Times: No, only for identified peaks

Curve Type : Linear
 Crigin : Included
 Weight : Equal

Recalibration Settings:
 Average Response : Average all calibrations
 Average Retention Time: Floating Average New 75%

Calibration Report Options :
 Printout of recalibrations within a sequence:
 Calibration Table after Recalibration
 Normal Report after Recalibration
 If the sequence is done with bracketing:
 Results of first cycle (ending previous bracket)

Signal 1: NPD2 B,

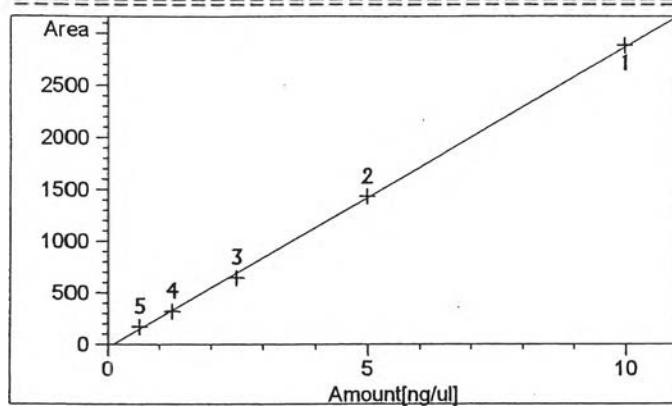
RetTime [min]	Lvl Sig	Amount [ng/ul]	Area	Amt/Area	Ref Grp Name
4.439	1	5 6.25000e-1	168.34340	3.71265e-3	Chlopyrifos
		4 1.25000	318.83307	3.92055e-3	
		3 2.50000	641.53961	3.89688e-3	
		2 5.00000	1428.49622	3.50018e-3	
		1 10.00000	2880.27710	3.47189e-3	

=====
 Peak Sum Table
 =====

No Entries in table
 =====

Method D:\VIRIST~1\METHOD\CHLOPY~1.M\NCHSTD.M

=====
Calibration Curves
=====



Chlopyrifos at exp. RT: 4.439
NPD2 B,
Correlation: 0.99963
Residual Std. Dev.: 33.21636
Formula: $y = mx + b$
m: 290.13125
b: -30.63394
x: Amount [ng/ul]
y: Area

Appendix B-3

Chloryrifos Standard Curve

Data File C:\HPCHEM\1\DATA\VIRISJ\N-CH1-1.D

Sample Name: Chlopyrifos

Chlopyrifos Standard Conc.10 ng/ul

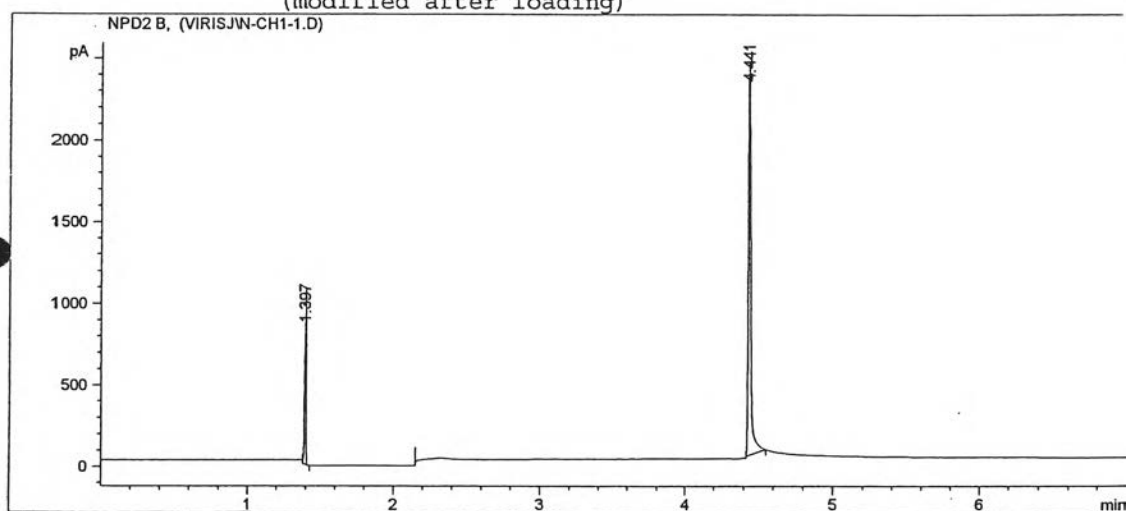
```

=====
Injection Date   : 2/7/2003 10:24:25 AM
Sample Name     : Chlopyrifos
Acq. Operator   : Viris J
Vial           : 1
Inj           : 1
Inj Volume     : Manually

Acq. Method     : D:\VIRIST~1\METHOD\CHLOPY~1.M\NCHSTD.M
Last changed    : 2/7/2003 10:23:56 AM by Viris J
                  (modified after loading)

Analysis Method : D:\VIRIST~1\METHOD\CHLOPY~1.M\NCHSTD.M
Last changed    : 2/7/2003 10:33:46 AM by Viris J
                  (modified after loading)
=====

```



External Standard Report

```

=====
Sorted By       : Signal
Calib. Data Modified : 2/7/2003 10:33:45 AM
Multiplier     : 1.0000
Dilution       : 1.0000
=====

```

Signal 1: NPD2 B,

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ng/ul]	Grp	Name
4.441	PB S	2880.27710	3.47235e-3	10.00134		Chlopyrifos

Totals : 10.00134

Results obtained with enhanced integrator!

```

=====
*** End of Report ***
=====

```

Appendix B-4

Chloryrifos Curve from Sample No.9

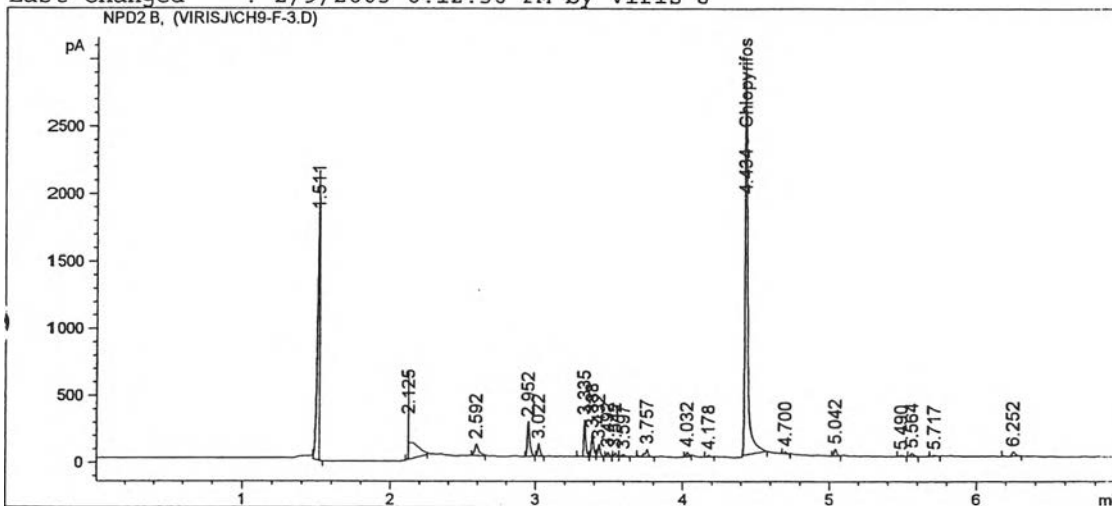
Data File C:\HPCHEM\1\DATA\VIRISJ\CH9-F-3.D

Sample Name: Chlopyrifos

Chlopyrifos From Sample No.9 Front Part

```

=====
Injection Date   : 2/12/2003 12:49:29 PM
Sample Name     : Chlopyrifos
Acq. Operator  : Viris J
Vial           : 1
Inj           : 1
Inj Volume    : Manually
Method        : D:\VIRIST~1\METHOD\CHLOPY~1.M\NCHSTD.M
Last changed   : 2/9/2003 6:12:36 PM by Viris J
    
```



External Standard Report

```

Sorted By      : Signal
Calib. Data Modified : 2/9/2003 2:33:46 PM
Multiplier    : 0.9850
Dilution      : 1.0000
    
```

Signal 1: NPD2 B,

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ng/ul]	Grp	Name
4.434	PB S	3937.49658	3.47353e-3	13.47186		Chlopyrifos

Totals : 13.47186

Results obtained with enhanced integrator!

*** End of Report ***

Appendix B-5

GC-NPD Condition for Methyl Parathion

HP6890 GC Method

Oven Initial temp: 100°C Maximum temp: 325°C
 Initial time: 0.50 min Equilibration time: 1.00 min

Ramps:

#	Rate	Final temp	Final time
1	60.0	240	1.17
2	10.0	265	0.91
4	0.0(off)		

Post temp 300°C

Post time: 1.00 min

Run time: 6.50 min

Back Inlet (Split/Splitless)

Mode: Splitless
 Initial temp: 250°C (on)
 Pressure: 10.48 psi
 Purge flow: 3.9 ml/min
 Purge time: 0.75 ml/min
 Total flow: 8.3 ml/min
 Gas saver: Off
 Gas type: Helium

Back Detector (NPD)

Temperature: 310°C (on)
 Hydrogen flow: On
 Air flow: On
 Makeup flow: On
 Makeup Gas Type: Helium
 Adjust offset: 50.00
 Electrometer: On
 Bead: On
 Equilibration time: 1.00 min

Appendix B-6

Calibration Curve of Methyl Parathion

Method D:\VIRIST~1\METHOD\NMPSTD.M

=====
 Calibration Table
 =====

Calib. Data Modified : 2/9/2003 1:36:53 PM

Calculate : External Standard
 Based on : Peak Area

Rel. Reference Window : 5.000 %
 Abs. Reference Window : 0.000 min
 Rel. Non-ref. Window : 5.000 %
 Abs. Non-ref. Window : 0.000 min
 Uncalibrated Peaks : not reported
 Partial Calibration : Yes, identified peaks are recalibrated
 Correct All Ret. Times: No, only for identified peaks

Curve Type : Linear
 Origin : Included
 Weight : Equal

Recalibration Settings:
 Average Response : Average all calibrations
 Average Retention Time: Floating Average New 75%

Calibration Report Options :
 Printout of recalibrations within a sequence:
 Calibration Table after Recalibration
 Normal Report after Recalibration
 If the sequence is done with bracketing:
 Results of first cycle (ending previous bracket)

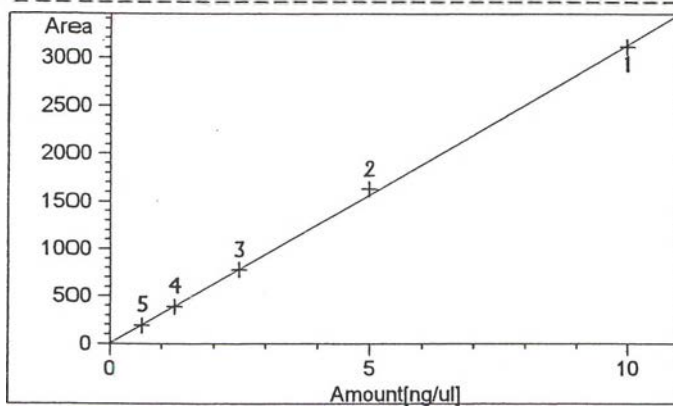
Signal 1: NPD2 B,

RetTime [min]	Lvl Sig	Amount [ng/ul]	Area	Amt/Area	Ref Grp Name
4.222	1 5	6.25000e-1	188.17635	3.32135e-3	Methyl Parathion
	4	1.25000	387.21329	3.22820e-3	
	3	2.50000	770.96515	3.24269e-3	
	2	5.00000	1623.77698	3.07924e-3	
	1	10.00000	3107.96753	3.21754e-3	

=====
 Peak Sum Table
 =====

No Entries in table
 =====

Method D:\VIRIST~1\METHOD\NMPSTD.M

=====
Calibration Curves
=====Methyl Parathion at exp. RT: 4.222
NPD2 B,

Correlation: 0.99970

Residual Std. Dev.: 32.06391

Formula: $y = mx + b$

m: 312.86840

b: 2.71235

x: Amount [ng/ul]

y: Area
=====

Appendix B-7

Methyl parathion Standard Curve

Data File C:\HPCHEM\1\DATA\VIRISJ\N-MP1-1.D

Sample Name: Methyl Parathion

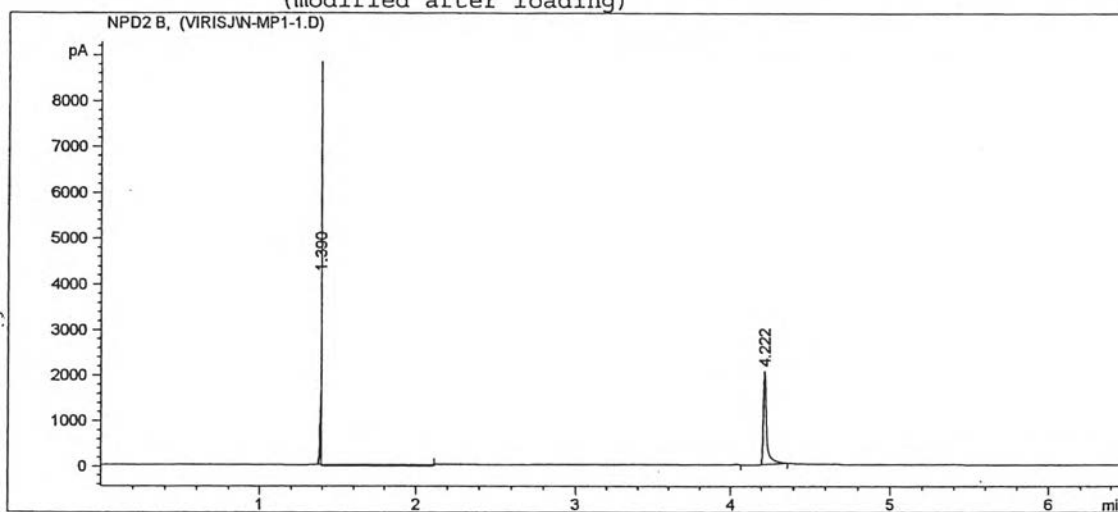
Methyl Parathion Standard Conc. 10 ng/ul

```

=====
Injection Date   : 2/9/2003 1:29:57 PM
Sample Name     : Methyl Parathion
Acq. Operator   : Viris J
Vial            : 1
Inj             : 1
Inj Volume     : Manually

Method          : D:\VIRIST~1\METHOD\NMPSTD.M
Last changed    : 2/9/2003 1:25:13 PM by Viris J
                  (modified after loading)

```



External Standard Report

```

=====
Sorted By       : Signal
Calib. Data Modified : 2/9/2003 1:25:13 PM
Multiplier      : 1.0000
Dilution        : 1.0000

```

Signal 1: NPD2 B,

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ng/ul]	Grp	Name
4.222	PB S	3107.96753	3.22162e-3	10.01268		Methyl Parathion

Tctals : 10.01268

Results obtained with enhanced integrator!

```

=====
*** End of Report ***

```

Appendix B-8

Methyl parathion Curve from Sample No.6

Data File C:\HPCHEM\1\DATA\VIRISJ\MP6-F-3.D

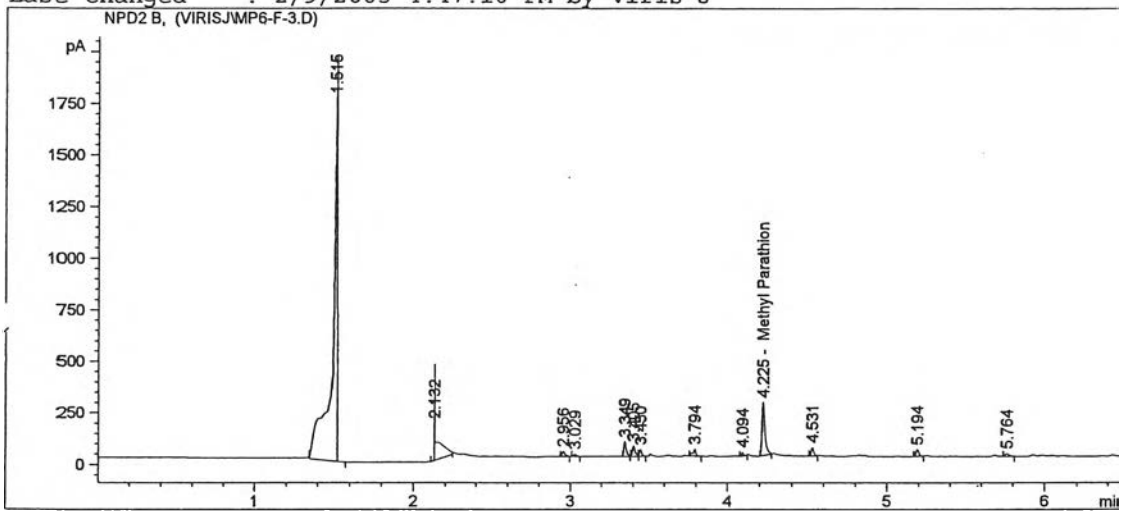
Sample Name: Methyl Parathion

Methyl Parathion From Sample No.6 Front Part

```

=====
Injection Date   : 2/16/2003 12:07:07 PM
Sample Name     : Methyl Parathion
Acq. Operator   : Viris J
Vial           : 1
Inj            : 1
Inj Volume     : Manually

Method          : D:\VIRIST~1\METHOD\NMPSTD.M
Last changed    : 2/9/2003 4:47:10 PM by Viris J
    
```



External Standard Report

```

=====
Sorted By       : Signal
Calib. Data Modified : 2/9/2003 4:47:01 PM
Multiplier     : 1.0000
Dilution       : 1.0000
    
```

Signal 1: NPD2 B,

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ng/ul]	Grp	Name
4.225	PB	345.95706	3.17117e-3	1.08063		Methyl Parathion

Totals : 1.08063

Results obtained with enhanced integrator!

*** End of Report ***

BIOGRAPHY

Mr. Viris Jirchaiyabhas was born in Bangkok, Thailand, on January 27, 1972. He finished high school from Debsirin School in 1990 and received Bachelor Degree of Occupational Health and Safety from Public Health Faculty, Mahidol University in 1995. In addition, He received Master of Art of Industrial Psychology and Organization from Liberal Art Faculty, Thammasat University in 1999.

He had worked as Safety and Environmental Officer in Siam Cement Public Company Limited between 1994 - 1999 and in Siam Cement (Ta-Luang) Company between 1999 - 2001. After that he started as a graduate student in International Programs in Environmental Management, Chulalongkorn University in May 2001 and completed the program in May 2003.

