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AROCLORS

METHODOLOGY

1. Does Monsanto have an active analytical program?
For how long?
Scope?
Level of activity?
2. Does Monsanto have methodology?
3. What is the principal of the method?
Is the procedure written for issuance to the scientific community?
4. What types of materials can be analyzed with this procedure?
5. What is the accuracy?
6. How are the calculations made for the chromatographic data -
for the mass data?
7. Are reference materials available? What isomers?
How do we obtain these isomers?
What is the purity?
8. What is the specificity?
interference
~~Transference~~ from pesticides?
How are these handled by the method?
What about PCV peaks that have shifted from the standard peaks?
What about absolute identifications?
Is the GC/Mass proof positive?
Does the methodology have other limitations?
9. What is the sensitivity - for GC? - for mass?
10. How much have we exchanged with others on methodology?
11. Do we know of alternate or better methods?
12. Where has Monsanto used this methodology?

Environmental Residues

1. Do river waters and sediment contain PCBs?

Which PCBs? Is there evidence for Monsanto's products and what is the source of these products?

What do we know about photo-oxidation of DDT or DDE?

Can pesticides contain trace contaminants of the PCB type?

What about chlorination processes - sewage plants?

2. Does wildlife, including birds and fish, contain PCBs? Which PCBs?
3. What about air - can PCBs be found?
4. Has Monsanto looked at soils for presence of PCBs and pesticides?

Process

1. Is methodology being used to monitor plant effluents?

Existing Product

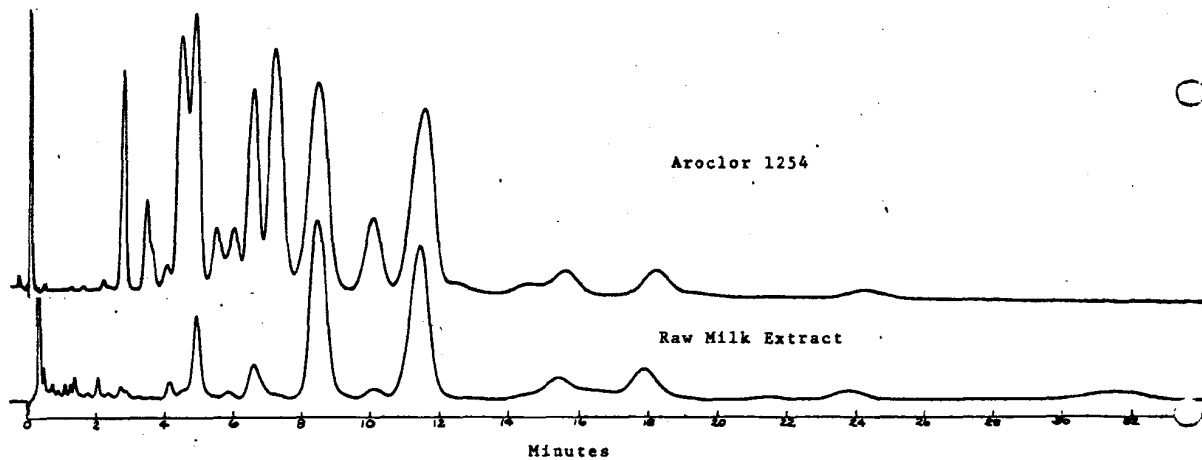
1. What does Monsanto know about compositions of Aroclor products, per se? Can typical product material be provided? How many components have been separated by GC? Can this data be provided?
2. What about biodegradation of Aroclors? Which isomers? Under what type of conditions? Evidence for isomer ratio changes?
3. Thermal stability - is Monsanto looking into this?

Toxicity Tests

1. Does Aroclor build up in tissues? What animals have been studied? Is Monsanto correlating build up with toxicity?

Other

1. What do we find regarding Aroclors in dishwater detergents? What about trace toxic impurities of another type in Aroclors. Any knowledge? Has Monsanto looked at milk samples? Findings?



MONS 035870

Aroclor 1221

Gas Chromatographic Conditions

Instrument: Hewlett-Packard 5750
Research Chromatogram

Detector: High Temperature 63 Ni

Operating Temperatures

Inj. Port: 225°C
Column Oven: 190°C
Detector: 290°C
Pulse Interval: 150
Attenuation: 8X10

Flow Rates

Carrier: 60 ml/min (He)
Purge: 120 ml/min (Ar/CH₄-9/1)

Aroclor 1242

Aroclor 1248

Aroclor 1254

Aroclor 1260

Minutes

MONS 035871

Aroclor 1221

Aroclor 1242

Aroclor 1248

Aroclor 1254

Aroclor 1260

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MONS 035872

Fractionated 1130

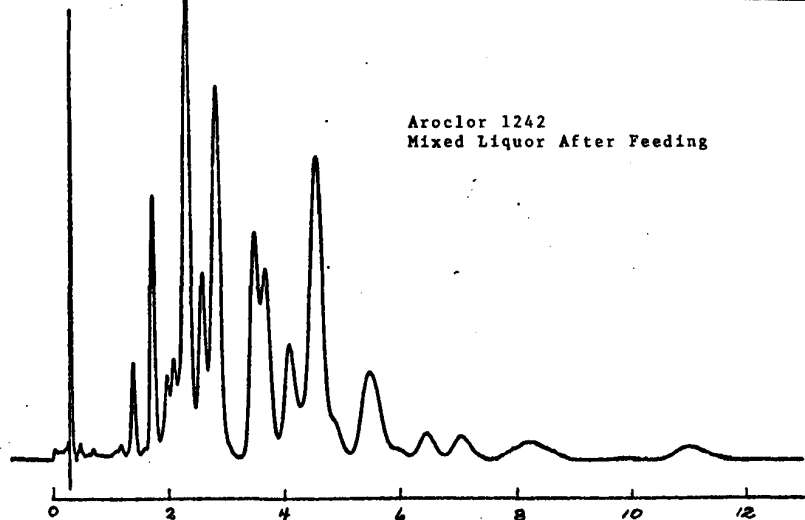
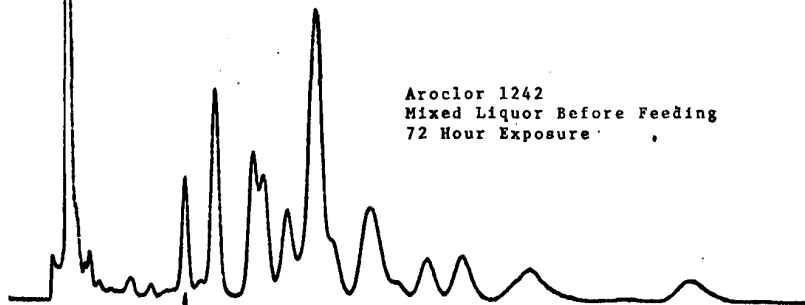
Aroclor 1242B
(Fractionated 1142)

Aroclor 1242

MONS 035873

0 2 4 6 8 10 12

Semi-Continuous Activated Sludge Biodegradation



Fractionated 1130

Aroclor 1242B
(Fractionated 1142)

Aroclor 1242

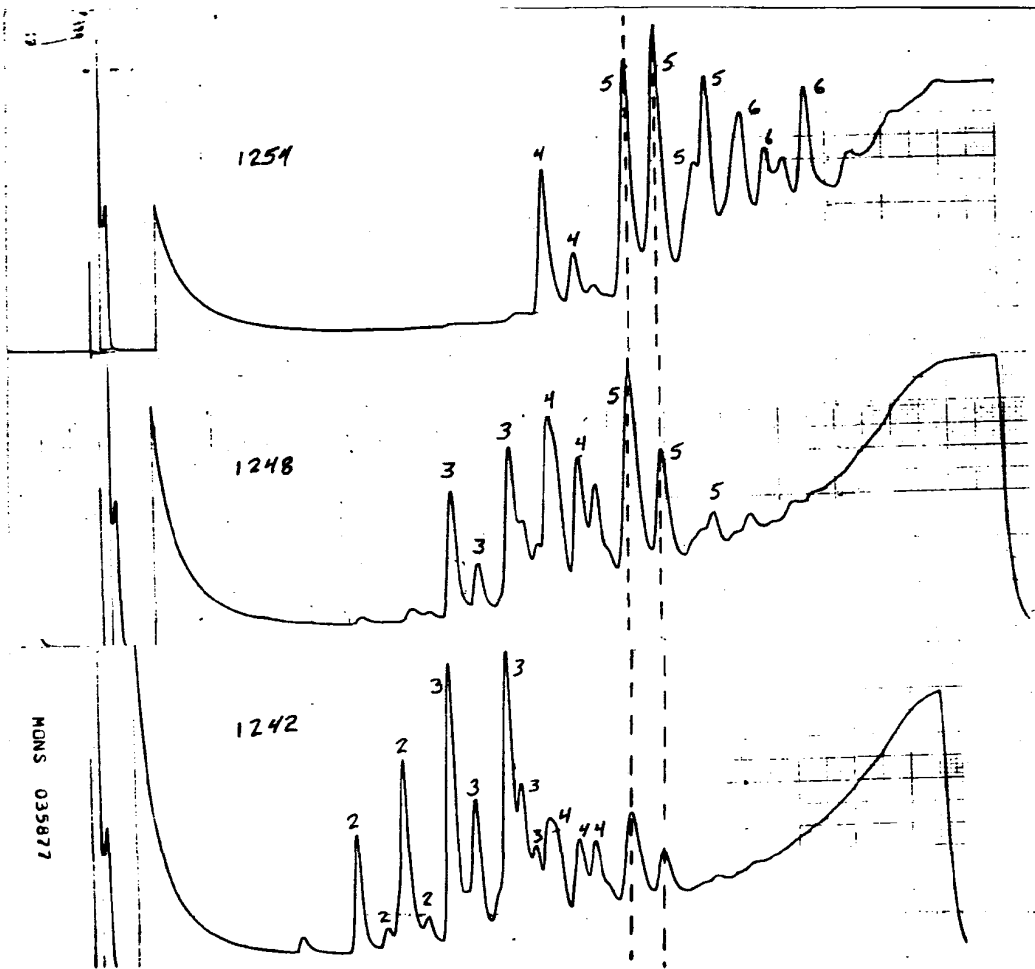
MONS 035875

0 2 4 6 8 10 12

ANIMAL LONG TERM STUDIES

INTERIM STATUS

	<u>1242</u>	<u>1254</u>	<u>1260</u>
<u>2-year rat chronic</u>			
At 1, 10, 100 ppm	100 ppm	100 ppm	100 ppm
Status-9 months	Poss. liver enlargement	Poss. Liver enlargement	Poss. liver enlargement
	<u>Males</u>	<u>Males</u>	<u>M & F</u>
	10 ppm	10 ppm	10 ppm
	O.K.	O.K.	O.K.
<u>2-year dog chronic</u>			
Status--9 months	100 ppm O.K.	100 ppm Body wt. dec. 10 ppm O.K. 1M-1F died-- cause unrelated to exp't	100 ppm 1M-1F died refused food-- no other <u>gross abn.</u> 10 ppm possible body wt. effect



MONS 035877

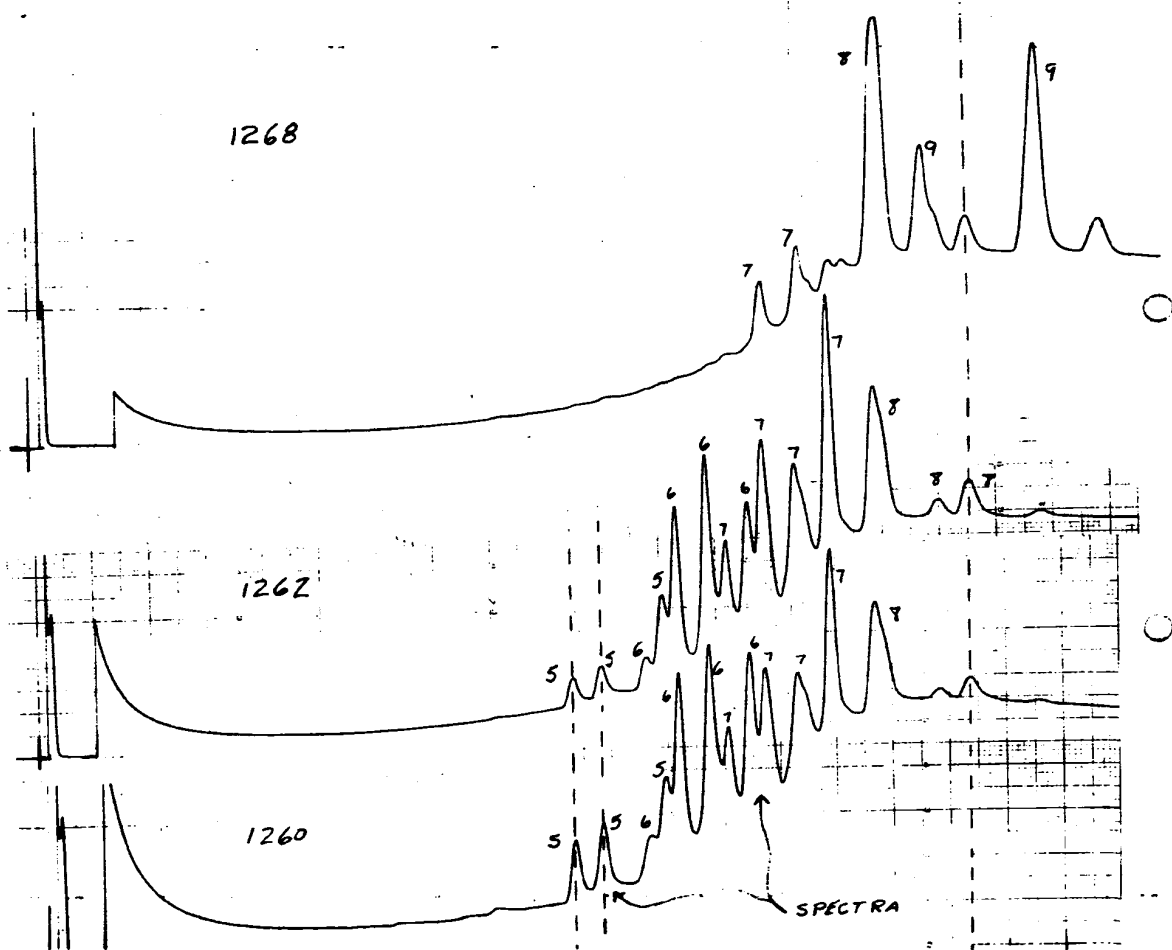
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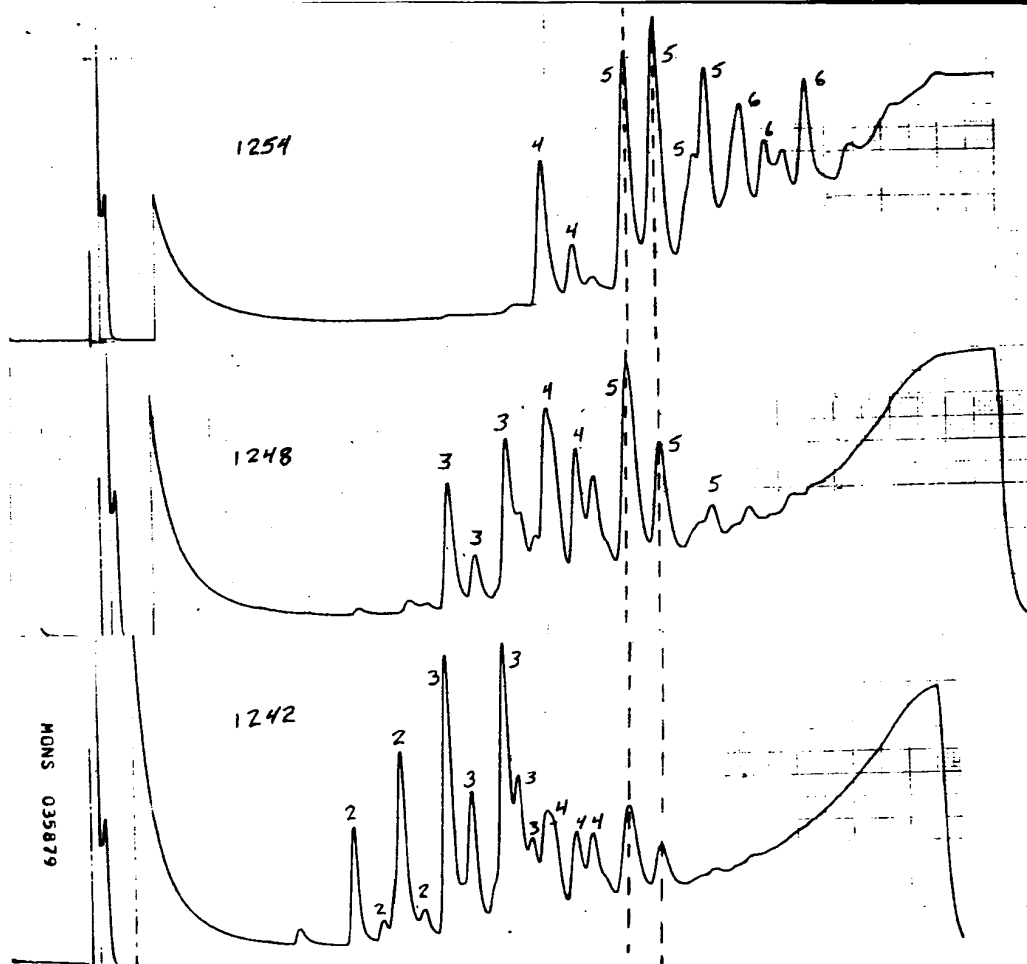
1268

1262

1260

SPECTRA





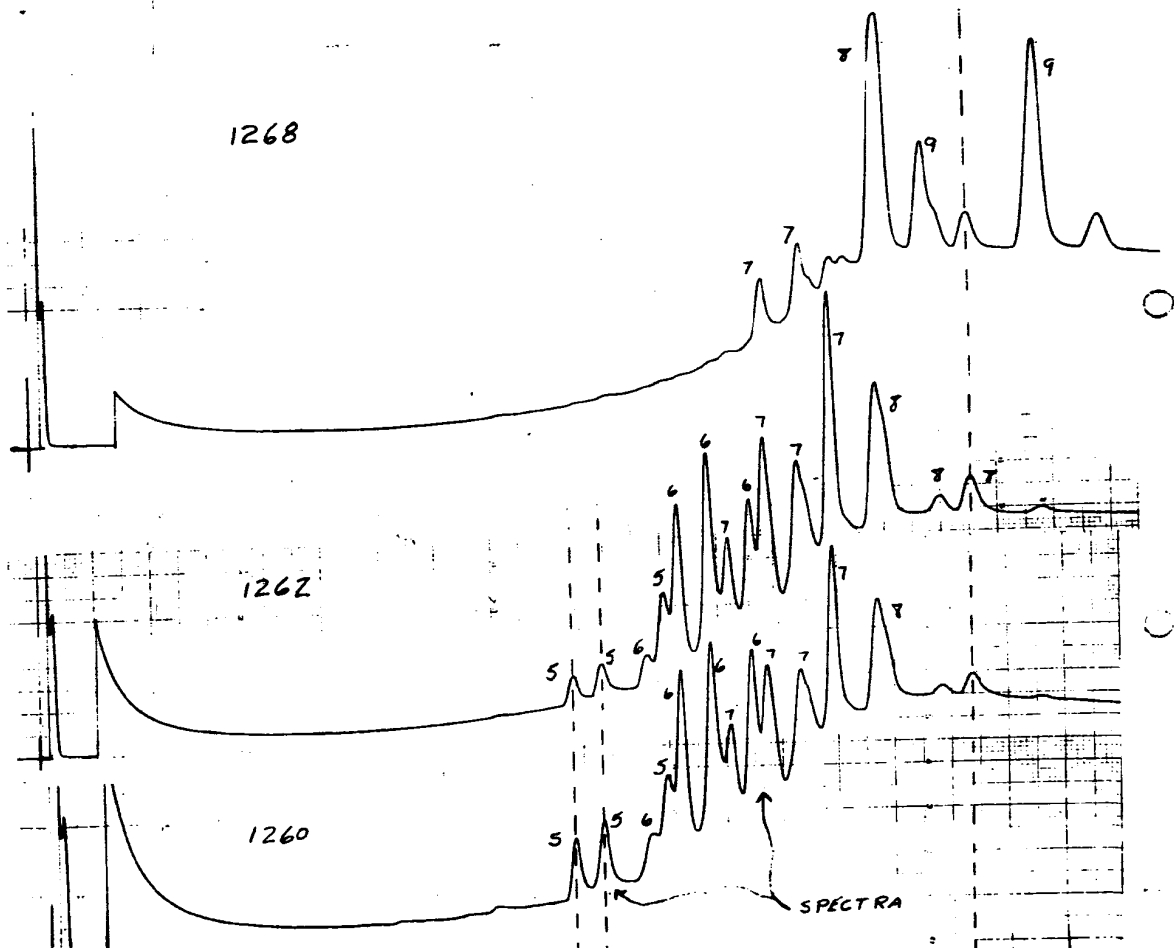
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1268

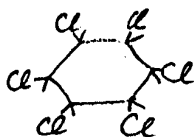
126Z

1260

SPECTRA



COMMON INSECTICIDES

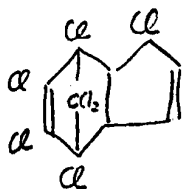


LINDANE OR

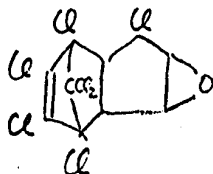
ALPHA BHC

BETA BHC

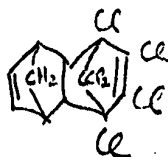
GAMMA BHC - INSECTICIDE



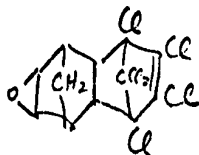
HEPTACHLOR



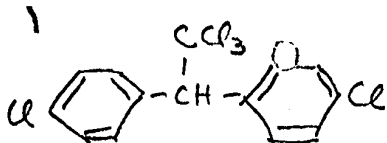
HEPTACHLOR EPOXIDE



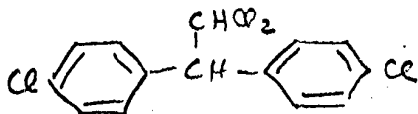
ALDRIN



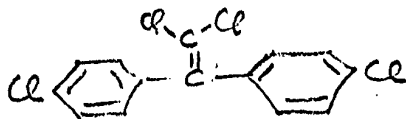
DIELDRIN



DDT



DDD



DDE

REK