BOOK NO._____ FROM_____ TO_____



Shorthand Notes

WB 1115

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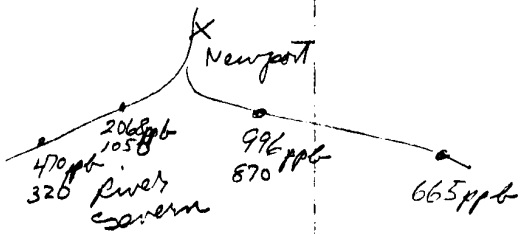
WILSON JONES

Non-Skid Edge · Stands Upright · Will Not Slide

MONS 059493

5-4-70 Newport Meeting



45' high tide - One million tons of mud moves with each tide.

Plant built in about 51.

Benzene
acetone
Feed
↓ Furnace
Biphenyl
Tubular
Unit → Biphenyl Cl_2 $\boxed{\text{Chlorinators}}$

3 Chlorinators on Batch Operation

Recovered
HCl - no detectable PCB in HCl.

{ used for bone digestion -
Now - metal treatment.

MONS 059494

trace of chlorophenols found

HCl used for fumaric acid.
Haven't made food grade
fumaric from HCl for
18 months.

Potential Sources
Storage
Drum Filling
Estuary
Effluent
Etc.

17 million lbs/yr

11 million	1242
2.5 "	1254
2 "	1260
0.5 "	1268

Approved site for Perle Brothers. Industrial toxic waste.

Commercial Disposal Site — Samples from site pools + streams showed less than 4 ppb.

Pontypridd dump site

— acceptable mode of disposal.

9,600 lbs. / ~~[illegible]~~ year still bottoms
3600 " " filter cake

MONS 059495

PCB — in million gallons.

30 lbs. /day — in effluent from plant at beginning of year.

$$\frac{\frac{0.1\ lb}{1\ lb./day}}{100\ ppb} = \text{Target}$$

10 ppb — Vodden's Target

Area dilution factor must be taken into account.

Bill Papageorge — used water solubility level as max. figure.

No fish from area waters analyzed yet for PCB. Ministry of Agriculture has requested this.

No work done yet on air sampling. Need to pinpoint sources. Ventilation system?

MONS 059496

Purle Incinerator

1300°C, Residence Time 3 sec.
capacity 500 lbs. / hour
will only accept liquids or
suspended solids.
Effluents - Aqueous scrubber liquor
Stack Gas.

Line drainings - more
volatile PCB's used.
Chlorine content 25%.

~~No~~ Gas samples - no
sign of PCB's - scrubber
tower samples.

Residual Aroclor in drum
is problem - few lbs left
5 to 6000 drums / year sent
out.

MONS 059497

Aroclor manufacture — 44% of Total Prod. Electrical Applications

1/2 million lbs. in capacitors

Little transformer business.

35% NCR

→ Paper Coating → Wet Paper
Paper Off Cuts (Broke)

21% Other Applications
very little in paint + cutting oils.

Jet lubricant additive —
30 tons/year
Castrol — little put in to get lubricant through test.

Diffusions pumps, hot melt sealants, polysulfide rubber sealants.

Drum retention of Aroclor will be pursued in ~~States~~ — Design of drums.

3 lbs at ambient temp.

NCR — sources of contamination
— Aroclor 1242 — spillages (transfer)
surface water (31,200 ppb)

Rivers ← Brook
Colne
1620 water
152500 mud

MONS 059498

Cleanup procedures with customers are in better shape than in ~~states~~.

Seal report will be published within a few weeks.

Pat Reagen -

Ex Solid Waste Dump - Maerby

Extracts sent to Ruabon for GC.

9 Samples All less than 4 ppb

Mud Ex Estuary

	July '69	Dec '69
Sully		
Peterstone	470	320
Lighthouse	2068	1,050
Golfcliff	966	870
Cold Harbor	665	1850
Beachley		

MCNS 059499

Hewlett-Packard 402 – Last April
on Stream. PCB

Interceptor Pit – 3,000 – 190,000
Milk of Lime Tank – 1,000 – 57,000
Effluent Stream – 22 – 22,000
Hydrochloric Acid – None Detected

Main problem – corr. of materials – preliminary injection.

14 Sps / Day

2 Pumps –

* – How to zero in on unknown samples for right level – to save time.

Doug
Casey – } Hewlett-Packard
Pat
Reagen – } 4-Nitrodiphenylamine
3 months maintenance

First automatic sampler

MONS 059500

Lethal Dose - Rats

DDT	500 mg/kilogram
Ponta	350-750 mg/kilogram
HB40	>30,000 mg/kilogram
Dioxin	0.6 microgram/kilogram
Parathion	ca 10 mg/kg

MONS 059501

Get MCL/Bangor letter proposal from [illegible]

5-5-70

Alf Vodden ~~meinprize~~
Jack ~~[illegible]~~ - Degradation of PCB
Dick Baxter -
Ron Lidgett ~~Joe Brown~~

Telling - unilever has seen chlorinated terphenyls and reported same along with PCB's.

Three incidents - highlight UK
Irish Sea Incident - dead birds - higher than normal in PCB's. 100 ppm found in tissues.

Actual levels are lower than originally reported. Aroclor 1254 found. ~~100~~

Report will appear in draft form in mid-May. Will not indict PCB's too heavily.

Dead Seals - found to contain PCB's.

2 Cases - No apparent correlation with PCB content. Starvation has been determined as the causes.

MONS 059502

Ministry of Agriculture & Fisheries

Unilever - biggest processor of smoked herring. Dr Tocher has found PCB in herring.

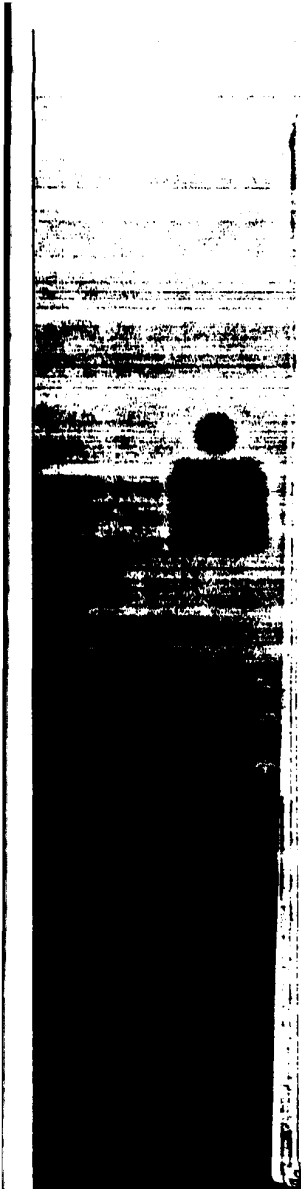
Cashew Nuts - PCB found in pkg. material used for sweet products. Little from drums contain Aroclor 1242 - From paper or paper mill broke.

PCB found in many paper materials. NCR process responsible.

* Most govt. labs set up for 1254 + would miss 1242 in birds.

No reports of PCB in milk in UK.

MONS 059503



all problems – marine based.

* St. Regis Papers – do they have any NCR broke which would be made into cardboard mats for food industry.

Could explain fact that this is in mainly paper products.

20% broke from Teape Co sold to other paper manufacturers who make boxes etc with this product.

RON LIDGETT

All work done of Ceroclor 1242 using packed columns + methods developed by S. Tucker. Haven't developed any methods per se.

MONS 059504

High resolution columns - need to give high reliability + accuracy. SCOT - columns 'Porous layer open tubular'

6 Months - Aroclor 1242 - 24 hr degradation 254 UV filter lamp -

4-6 Week Period - Make columns in 3 hours - prepare own columns.

First Problems - Were Biodegradation Aroclor 1242 -

yet to look at water from Estuaries + rivers in UK - no work on wildlife.

MONS 059505

1. Biodegradation - April 1968

Literature Search - Found nothing published.

Primary - loss of identity

Ultimate - to CO_2, H_2O_2, inorganics

Acceptable - Remove undesirable property

Concentrating on primary - no longer see by GC work.

2. Organisms

Surface Waters

Biological Treatment Plant

Soil Systems

3. Removals

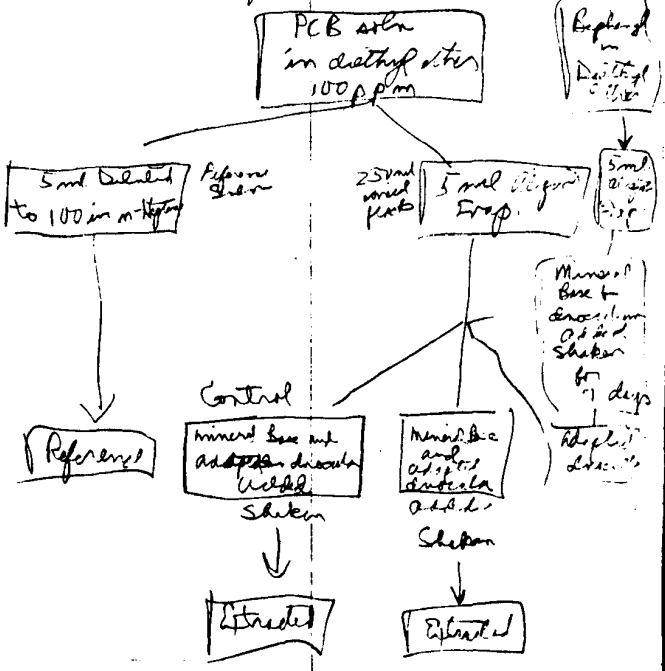
Surface Analysis

Extract Pool Culture

Controls - insure that measurement is of biodegradation & not something else.

MONS 059506

250 ml. conical flasks



MCNS 059507

Ministry of Agriculture

Looked at

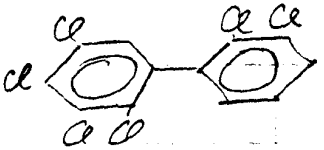
2,4' 2,3',4'
4,4' 2,3,2'

No evidence for degradation

Without Biphenyl

Per GC peak 1

Presence of biphenyl promoted this.
No degradation of p,p' dichlorinated biphenyl.
Biphenyl attacked at 2,3 positions.



Highest chlorinated species that will degrade. Anything else will be isomers produced by taking chlorines from this structure.

Identity of peaks not made this makes interpretation of data difficult.

MONS 059508

River Die Away - Treatment now underway at MCL.

Ruabon concerned about Intergeneous System (Dispersion) concerned with Fishers procedure.

2 liter capacity - semi-continuous lab. units are in operation.

Chlorinated Diphenyl Ethers -

↳ No other data at MCL on ~~best approach to~~ other organic cpds on biodegradability. Will look at HB-40 because they will face this problem.

Isomers - ~~Hex~~ 2,2',4,4',6,6' Hexachlorobiphenyl

Isomer available.

MONS 059509

Biodegradability

Std procedures for industry use
– still need to be resolved.

Toxicity

	LD_{50} Rats
NB 40	> 30,000 mg/kilog
PCB	2000 → 12,000
DDT	520
Dioxin	0.01

Current Studies 0.1, 10, 100 ppm

	1242	1254	1260
2 yr Chronic Rats/Dogs	No effect	No effect	No effect
3 Generation Study	"	"	

Battelle Institute did a review on incineration recently.

Asking for bid for 1½ million lbs./year capacity.

Conservationist – not so concerned about toxicity as persistence.

MONS 059510

MCL's Source of Organism

- Now has organism which grows on PCBs. Bugs now trained on biphenyl.

Does Monsanto want to support further with grant to student? $2000/year.

Dept of Fisheries - Freshwater Lab
Marden

(1 ppm²)

0.1 ppm PCB (Aroclor 1254)
Rainbow Trout - died in 48 hours.

Big effort on tracing source of PCB's. - sewage treatment plants being checked.

Levels of apparent PCB high & interfer with DDE and other pesticides. DDE is most common pesticide. Never more DDT.

MONS 059511

Aroclor 1254 seems to be the cpd found in seals + wildlife. One peak disappears regularly. Always largest peak that disappears. Fish + seals.

Govt. Chemist -- couldn't confirm using Aroclor 1242 as [illegible]

Seal liver -

Chromatograms are very poor.

Fish

Surface - Bulk of fat in muscle

Hering - muscle

Deep Water Fish - Bulk of fat in liver

Cod - Liver

Seal process out of proportion - not out of ordinary compared to other locations.

70 ppm

50 - 410 ppm PCB in liver of [illegible]

MONS 059512

Computation - Holden has 7 methods of quantifying. Range is 2/1 ratio.

Difference between 0.1 and 0.2 ppm insignificant from a biological sample.

Chromatograms go back to 1963 - review of old curves gives evidence of PCBs. Thinks not bad [illegible] PCB peak.

Avian Peak - X Peak - after

Now peak eluted out after Aroclor 1242 peak which disappears.

Marine mustations -

East + West coast samples

Hering
Mackerel
Whiting
Cod
Plaice

Regular Basis

Small PCB
< 0.1 ppm
Found

Always higher than pesticides

Less than 1% contain more than 0.1 ppm

Detection Limit 0.05 ppm

Representative of coast line of UK

MONS 059513

1000X conc for water

1 liter water extracted with 50 ml. of hexane → 1 ml. for injection

5 Estuaries – No industry to sea

Dee – clean
Tray –
Forth – mod. industry
Clyde – Heavy industry

Direct relationship with industrial environment for pesticides – reverse to expectation that this comes from ag areas.

Residue levels of PCB (Aroclor 1254) ~~used~~ in Rainbow ~~trout~~ fish which died after exposure to PCB.

Ministry – Agriculture Fisheries & Food Whitehall Place
Currently doing toxicity work.

Mr. Lloyd in charge of section – Toxic Chemicals or Pesticides.
Toobey –

Biggest problem related to anal. techniques.

MONS 059514

Not really concerned about PCB's per se. Very concerned about how they get there - Discharge into sewage - trade wastes seem to be the route. Not found in sewage effluent or liquors - only sludge. ~~Thousands~~ Hundreds of ppm in sludge - (dry weight) 1254

Sludge to sea - 13.9 ppm

Pesticides run less.

No problem with fresh water - marine environment only.

PCBs are not always fellow travelers with pesticide - ∴ not likely contaminant of pesticides.

Only 2 chlorinated cpds occur in nature.

MONS 059515

10 ml of 40 ppm in acetone

0.1 ppm Aroclor 1254

checked every 2 hrs.

Changed water every 24 hrs.
Dropped less than 3/4

20 Fish
5-7 inch long

Rainbow Trout

Fresh Water	Hrs.	H_2O Conc.	Conc PCB in Fish	
	0	0.1 ppm	1 ppm muscle	
	24	New Water Held 0.025	3 ppm muscle	
	48		8-9	
	96		7-11	1 Dead
0.1 ppm	120		23-36 v	
	121		10-15 m 35-50 v	4 "
			15-18 m 45-56 v	2 "
	192		12-14 m 64-70 v	
clean water	0			
	1		14-17 m 61-63 v	
	168 hrs.			
	1			
	2 wks		6-11 m 58-70 v	

Whitehall took much longer to kill off. No analysis of fish.

MONS 059516

+ No degradation of Aroclor 1254 band in fish toxicity study. Proves point that no isomer change at lower level - perhaps scheduled repeat of our work can be eliminated.

Hexane extraction of fish made up with Na_2SO_4 carried out ~~at~~ with Soxhlet extraction at 80° to get 100% recovery.

MONS 059517

Wiggins - Teaze - Fri

analyze cardboard boxes in VS for PCBs.

Environmental Pollution Journal - Priest

PCBs in Wildbirds in Britain

To issue in June.

High doses produces pericardium & endema of the kidneys.

Also looking at biodegradations

NB-40 - Plasticizers

90 Day feeding studies will be started.

Biodegradability.

Reactor Coolant

MONS 059518

40% Hydrogenation - By bond as weight

Santowax

Terphenyls - No hydrogenated materials

Rats Some biphenyls.

LD_{50} 3/g/kilogram (method of Miller & Tainter

LD_{50} Aroclor 1242

<4g / kilogm

∴ HB-40 considerably less toxic.

Need info on metabolism + Biodegradability - microorganism

Evidence on metabolism - large % excreted unchanged in urine.

HB-40 approved by FDA?

Yes for plasticizers -

Availability of pure isomers.

Look at metabolic fate.

Ortho - Hydrogenated

Para - "

Purity - as good as possible

200 milligms quantities

Invitro - studies!

MONS 059519

Wildlife - still finding PCBs in species from UK
milk - Occasionally found in milk. Levels are very low.
Sometimes found in beef + mutton fat. Cannot explain - may be feeding or watering of stock.

May now find traces in human fat. Indications of 0.1 pp in PCB.
Higher traces of Aroclor 1254 and higher Aroclor 1260.

Part time hobby with pesticide residues

[illegible] of [illegible] sampling

PCB can be found in aquatic wildlife

MONS 059520

Terrestrial birds of prey & herons show highest values.

Heron liver as high as 100 ppm.

No mass work.

PCB - higher than total of pesticides.

Oxidize interferences to phenone (DDT) metabolite.

Question about use in paints was brought up.

Sewage effluent returned to river - contains no PCB at Pittsburg.

OECD Collaborative Study.

→ Holden will be involved. State labs. will be involved.

Suitable materials? - some sort of fish.

MONS 059521

No sas. of beef kidney fat, butter or mutton kidney fat from New Zealand have any evidence of PCB. Findings are from UK samples.

Utrecht

80% of Aroclor 1260 eggs notched.

Chlorophan - A-60 7% of fertile eggs notched.

Fractionated PCB

25% Ether in Hexane

Peaks in GC

Obtained large quantities of toxic mat.

Tested c̄ chicken eggs.

Mass Peak 304 - 4 Chloroxylene

Tetra chloro [illegible]

Penta chloro [illegible]

Hexa -

Hepta -

Aroclor - No peaks found

MONS 059522

Action
Would like reference samples of dioxins - will send if possible.

Penta - dioxins - formation during pyrolysis.
(Tetrachlorophenol → Dioxins
→ Hexachlorodioxin

Especially with Wood Treated ε Pentachlorophenol.

Isolation Test in Nature

Looking now for furans in seals + wildlife.
Levels up to 300 ppm in blubber of seals - high, will alarm people.

Need for isomers not now a problem —

MONS 059523

Dr Sören Jensen
Lantbrukets Högskolan Kemi I
Ultuna Uppsala.
involved in monitoring work.

Polychlorinated Biphenyl — 2 Chlorine Atoms.
Hexachlorobutadiene

MONS 059524

Wasa

Find PCB's in all sas. of animal origin.

PCB 3 — high chlorine atoms.
No standards for analytical chromatograph — need to prepare same.

100 - 500 tons in Sweden

Thin layer chromatography used
Sensitivity —

p. 12 —

MONS 059525

No mass work done. p. p. 66
Special std - from Jensen - chromatograms
Aroclor 5460 — chlorinated terphenyl — ~~not the same~~
first mentioned as the Monsanto material used.
Phone call — aroclor 1242, 1248 only

Did not resemble chromatograms

PCB std from Jensen - not ~~from~~ Monsanto product.

No mass work.
Chromatogram for Aroclor 5460.
Can't control methods because of mixtures - should not sell products of this type.
Close reference to Jensen work.
100 γ/ml 1460
10 γ/ml 1248
10 γ/ml 1242
Oxidation - Before & after DDE is removed.

MONS 059526

TLC - Silver Nitrate adsorbs PCB extracted. Used to resolve & get greater specificity.
Conclusion of report - not too much PCB's in food stuffs. must get less in environment. Fish & human meat are greatest problem of PCB. Highest level in fish [illegible] Have written letters to [illegible] govt. authorities. Only power to recommend.

Between 2-3 yrs. of sampling 1967 - 1970 for report.
Always find PCB with pesticides.
Still have task group in operation.
Also working on mercury.
Report in 6 mos.

Known mats not toxic, most of samples were local - bought in Stockholm.

MONS 059527

Prof. Widmark - Routine analyses being done to provide financial support. Fundamental research - 10 yr. program - data acquisition & computerized form. Supported by tobacco institutions.

Multichannel analyzer - print out mass spectra - normalized ~~out~~ for column bleeding. Need computer to sort out intensities.
Mass Unit - Intensities
Quantitative Control - Ion Current measurement

High Background Intensity of Sample.
Better position to treat mass spectra with computer data - assembly basic language. Computer manufacturer did not provide software programs
Sensitivity - can be improved by repetitive scanning.

MONS 059528

Glass capillary columns -
- connection of columns
to mass spectrometer.

Tobacco smoke - up to
1/2 million theoretical plates
with column.

1500 Sas. analyzed for PCB.
Sewage muds difficult
Electron capture detector
system - quantification
is a problem.
Will contact Abbott about clarifying
his position.

False MONS 059529

Find DDT, Dieldrin
Pattern of PCBs cannot
be associated with higher or
lower chlorinated cpds.

Pike also analyzed - does not
know origin. Find big range
of PCBs.
Has not used mass on PCB sas.

Does not report results to anyone except to regulator.
Belines more identification needed.
Treatment of sample - extremely difficult - needs more emphasis.

Use isomers - chlorine or deuterium related.
DDT should be reduced in some areas. Not in regions where malaria prevails, Soviet Union, India + China.

Bayer - aggressive on pesticides.

Organo lead - analyze air by mass. Tetra ethyl lead - winter
Tetra methyl " - summer

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(1) Capillary Columns - combination with PCBs - wants info on this.
(2) Mass Data -

MONS 059530

Identification of unknowns using Gas Chromatography / Computerized Mass Spectrometry

Dr. Widmark -

Mrs. Widmark will also visit.

Wed. June 3 will be the date.

at least one night.

Pine needles around (Bagery) Lever tees - high in PCB compared to Stockholm - Jensens work.

MONS 059531

Friday

* Give method to Ron.
* Send method to Dr Knust (now via Ron Lidgett)

~~Utrecht~~ Widmark 1500 samples. fish, sewage sludge, some birds.

Food Hygene Group -
Van Sandwijk
Koeman + Vos.
- TNO - good ~~lab~~ consulting
Goat. Organization
DeBrau lab.

Knust - some public water works.
Germany

Italy - new toxicological work just starting
- no publicity

France - nothing new.
Disposal is being handled by all means.
- French goat. has (is?) appointed a new ministry of environmental control.

Widmark + Utrecht - ruled out
TNO very capable.

MONS 059532

Telling visiting states

unilever - June 2 Have 5-6 people working on this.

Ger - discussed problem with major customers.

Probelore - has bought electron capture instrument - will be in business at months end.

Rayer - has bought PE 400 GC instrument + will be in business soon.

Work on fish has been [illegible] some months. Feeding of mamals has been started. Long term work.

Toxicologists feel fish studies

Work on incineration at Rayer will continue when new gas chromatograph is received.

* analysis of PCBs from test plot soil samples. Can relate to ~~test pt~~ soil disposal (land fills).

Transformer labeling - worldwide agreement.

MONS 059533

France will notify customers in 4 days. Germany has already done this, Italy doesn't know. ~~[illegible]~~ Unilateral agreement must come from commercial end of business. Next meeting - Sept. 29

MONS 059534

5-18-70 Food + Fisheries

Ministry of Agriculture - Burnham

~~Dept of Foods + Fisheries~~

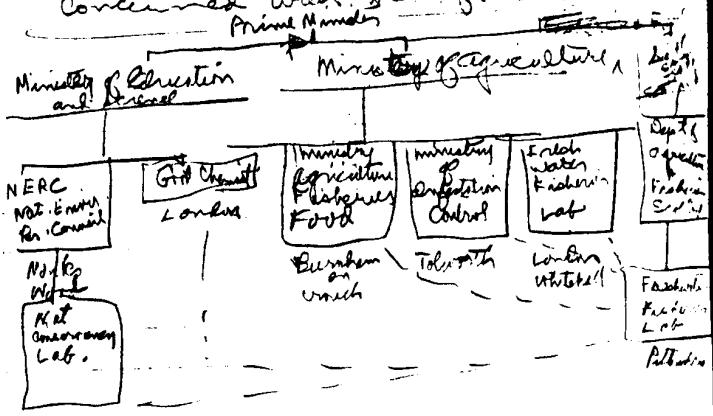
Coordinating role to deter on how PCB's get into environment, aware of all applications. Monitor fish, food + sludge products. Overlap with Holden - who is responsible for Scotland and Wales - (when fish is used as food - main concern.

Monks Wood - NERC

~~NERC~~ Nature Conservatory Laboratory

Broader interest in wildlife.

Concerned with wildlife skills.



MONS 059535

5-18-70

Dr. Portmann - Anal. Man
Dr. Shelton - Biologist
Mr. Wood - Man-in-Charge

PCB in lever - responsibility for fish. Part of Mr. Holdens operation.

Fish - West coast & East coast - examined. Mortality of birds in UK altered Dept of Ministry on problem. Passes & [illegible] detn as much about distribution & origin. Will cover drish sea area more closely than before - 1242 - 1262.

Shrimp, Cockell, Hook Nose Fish - 1242 more toxic than high end.

add PCB to water - 0.3 - 0.1 ppm up to 10 ppm.

Dr. Shelton running toxicity tests.

PCB running 1 to 2 orders less toxic than DDT

Don't understand significance of PCB in marine organisms.

all work done in plexiglass -

Findings - Accurate marine problem + not fresh water problem.

MONS 059536

Chromatograms resemble 1254
This is also

How wide spread is problem
- what about PCB's in
non-industrial areas.
Appears to be associated with
industrial areas.

Action
Program to look at fish from
non-PCB areas.

Forward Program
Monitor industrial estuaries - PCBs + pesticides
mussels from Bristol Channel will be examined.

* Exchange fish samples from
Bristol area for PCBs' - AVIAL.
Send methodology via R.L. Hyatt

MONS 059537

5-19-70

Link through pesticides - DDT, [illegible]
Dieldrin etc. Toxicity & field expts
Birds of prey and sea birds.
Currently - interested in PCBs
in guillemots (birds).

Analyzing livers - hawks, owls
& herons etc for pesticides
since 1963. 250 samples
per year.

Results for 559 wild life
species of birds were analyzed for
April 1966 - 1968 -
Objectives
Geographical -
Group of Birds -
Feeding Habits

MONS 059538

Petrelary birds from all
parts of UK contain PCBs.
Eastern England fish - 6-900 ppm
Fresh water feeding birds
contained highest levels.
Hawks - Falcons - bird
feeding
mammal feeding birds [illegible]

PCB

0 - 50 ppm Mammal Feeders
0 - 7C Bird Feeders
0 - 15 mixed Feeders
0 - 1 insect

Eastern England

6 - 900 ppm Fresh Water Fish Eaters
0 - 50 ppm

MONS 059539

Work will continue on looking at birds from Britain for some years to come.

Trying to relate to PCB in eggs etc - no results yet. Heron - levels of PCB in eggs are lower than DDT and Dieldrin. Levels of DDE are increasing + PCB and DDT are remaining constant.

	ppm		
42 herons	30	DDE	PCB levels are close to DDE
	40	PCB DDD	
	14.5	DDE	
~~Nest~~	10	PCB DDD	
	5	DDE	
	4	PCB DDD	

Sea Bird Eggs - MONS 059540

Entire contents wet weight. (Gillimot - 3-8 ppm
Razor Bill 6-7 "

Looks like 1254 PCBs in birds.

Bengalese Finch Toxicity Studies Carried Out -

Aroclor 1254 - fed to 28 Finch Birds were starved

PCB in large amt unacceptable. mixed with diet - reweighed to detn how much.

Diet Levels
6 ppm PCB
24
55
101
171

50% mortality - 56 days 250 ppm

Liver - 350 ppm content

1/13 toxicity of DDT

20 Birds - 3-634 ppm

7 " Died - 70-697 ppm

MONS 059541

Effect only for 24 or 48 hrs.

No work on fish analyses.
No evidence of isomeric change in the residues for Aroclor 1254.
Aroclor 1254 changes on standing in air - presumably due to volatility

Canadian Wildlife Service
~~Reynolds~~ - wanted info for PCB from Monks Wood.

Insects

Found aroclor in expt. butt [illegible]

Grasshoppers - no symptoms with deaths like pesticides + organic chlorine pesticides.
Couldn't find longevity of reproductivity factors with near lethal doses. No PCB <0.2 ppm found MONS 059542

If looking for effects don't look at insects.

Interaction effects sublethal dose of Aroclor increases effect of DDT or [illegible]
Effect only for 24 or 48 hrs

Supports fish findings that insect eaters have correct levels.

Effects not as obvious in [illegible]

Enlargement of kidneys.

PCB in paint - checken studies.

Have shifted future emphasis from lethal to sub-lethal effects.

Action

* Put emphasis on our toxicity feeding program - missing information.

Polychlorinated Biphenyls in Wild Birds in Britain and Their Avian Toxicity.

by Ian Prestt, D.J. [illegible] and N.W. Moore

Huntington, England

Confident that DDT + [illegible] responsible for thin egg shell effects

MONS 059543

Toxicologists
Relates thin egg shell to pesticides & not PCB's in Britain.

MONS 059544

Dr. Bunyan
Mr. Bailey

5-20-70 —

Sea bird incident — method of involvement

Investigation was analytical. Organic phosphorus cpds. Have done much work on DDT in birds. Tried to produce estimate of lethal dose. Stimulation of microsomal enzymes work is [illegible].

Thought that they were set up to do metabolic work, microsomal enzymes + residues. Decided to prepare microsomal enzymes. — to relate to number of [illegible] which isomers are being made.

MONS 059545

Feed no. of groups of birds (quail or pigeon)

Feed at several levels chronic feeding. Look at [illegible]

Mass spectrometer - 6 months [illegible]
Look at residues, micro
[illegible] enzymes (study [illegible])

Any alteration of biological
properties correlated with
structure. Will answer many
questions now exist.

Synthesis
Dichloro nitrobenzene - [illegible]
[rearrangement.
3-5g quantities.

Feeding levels up to 1000 ppm
for metabolic work. Killed
pigeons with DDE at this
level for one month.
(quail)
Birds absorb more than rats
for DDT.
Little overlap on samples
with Govt. chemist.
Get biased oa. of birds -
found 1700 ppm PCB in
liver. - compared to 900 ppm
By Govt Chemist.

Single birds analyzed.

5 ppm - pigeon up } Due to sample ...

<5 ppm - pigeon down }

1 nanogram DDE / 1 nanogram of PCB mixture

Factor of 2.6 lower.

First reported on cashew vats in drums.

Seabirds - received whole head - liver, brain, kidney + brain.

Liver tends to have higher figure.

Not an ag. chem - questioned about why doing work - because geared up.

Pesticides in birds are related to application - sea birds lowest.

cold acetone - reduces fat interferences - MCNS 059547

extract into hexane.

The Analyst - 1965

12-20 sar / day -

Clean ups -

PCB - Robinson & Richardson.



Chlorinated should perhaps be biodegradable.

Publishe about PCB in paper in journals

Have not been in touch with mfg.

Newport - Penta

Check with Boeing & get results back immediately.

MONS 059548

3,

MONS 059549

Actions

Newport

1. Notify Pat Reagen about recommendations on how to ~~concentrate~~ ~~determine~~ estimate PCB levels to chose correct sample size and avoid repetitive time-consuming runs. (E.S. Tucker)

2. ~~Compare~~ Exchange information with Pat Reagen/Doug Casey on their use of the first Hewlitt-Packard automatic GC sampler in the UK. (E. Emery).

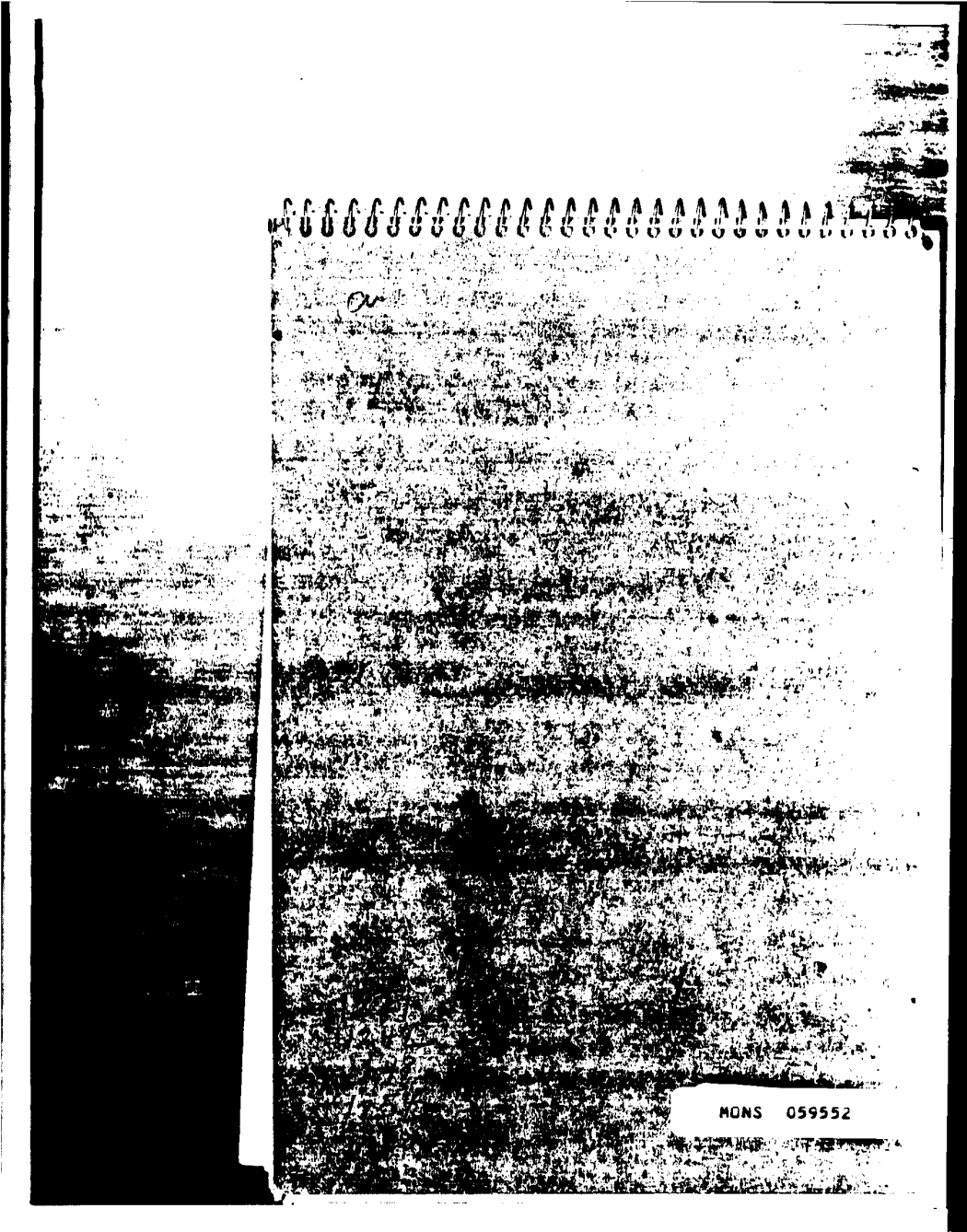
Rnabon

MONS 059550

1. Determine applicability of PCB methodology for chlorinated terphenyls with reference to oral reports by Telling of Unilever to Raubon. (E.S. Tucker)

2. Determine if St. Regis Paper Co. has NCR brake which ~~could~~ is made into cardboard containers for the food industry. Obtain and analyze such containers for PCB. [illegible]

2 -
3 -
4 -
2, 2' -
2, 3' -
2, 4 -
2, 4' -
2, 5' -
3, 4' -
3, 5' -
4, 4


MONS 059552