

Resolution

Monsanto

INDUSTRIAL CHEMICALS CO.

FROM (NAME & LOCATION)

E. S. Tucker, So. 2nd St., St. Louis, Mo.

DATE

March 8, 1972

SUBJECT

Plasticizer Environmental
Program
Status Report - A/S Support
Work

cc:

R. W. Bucknell - RBUCK
J. R. Darby - Res 1
E. M. Emery - Res 2
O. Hicks - Res 2
M. W. Farrar - R2E
→ P. R. Graham - PGRAH
J. H. Orem - JOREM
W. B. Papageorge - WPAPA
N. W. Touchette - Res 3
J. P. Mieure - Res. 2
M. W. Dietrich - Res. 2
D. B. Hines - Res. 3

Ref.:

P. R. Graham, Plasticizers
in the Environment, Proposed
Action Plan, 11-11-71

To:

R. E. Keller
T1B

Since the above referenced action plan was issued two meetings have been held to define the analytical support work which may be required of the Applied Science research groups.

Those in attendance at these meetings were P. R. Graham, N. W. Touchette, E. M. Emery and myself. The following is our consensus (E. S. Tucker, E. M. Emery, and O. Hicks) of the work which will be necessary to support the current action plan if completely implemented.

In those areas where work has already been initiated its current status will be noted.

Action Plan

I. End-Use Related Studies

A. Medical Applications

Responsibility

Job To Be Done

CD (PRG)
R&D (Rt. EK)

Complete S-334F blood bag extraction work. PRG select co-operator to prepare blood bags. R & D do extraction work.

Because there are indications from in hand solubility data that S-334F may be as extractable as DOP, it was decided that an abbreviated (less costly) experiment should be performed using the in hand C-14 labeled plasticizer.

This initial experiment would involve preparation of disks containing S-334F (radio labeled) and placing them in glass bottles with an appropriate amount of whole blood (surface to volume ratio equal to that of blood bags). The bottles

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would then be stored under conditions equivalent to those used for storage of actual blood. Disks prepared with DOP would also be run concurrently for comparative purposes.

Norm Touchette's group will prepare the disks in accordance with the formulations provided by P. R. Graham. Paul is also going to check with our medical department about obtaining the blood, exposing the disks, and storage of the blood.

The analytical group will develop a method for the determination of DOP in blood and analyze the samples from the study.

The physical chemistry group will handle the monitoring of the preparation of the disks and the associated method development and actual analysis for radio labeled S-334F.

Responsibility

Job to be Done

MED-R&D
(R.Et. Kelly,
REKeller)

Provide data for future FDA Drug
Section regulation relating to new
drug devices.

It was proposed by P. R. Graham under this heading that radio labeled S-334F be intravenously fed to laboratory test animals (dogs) and that the resultant tissue residues and physiological effects be measured.

Because of the unknown potential technical problems of exposing animals to S-334F in this manner it was decided that the feasibility of such an experiment should be explored with Industrial Bio-Test Laboratories (IBT) prior to any A/S work. It was agreed that the appropriate A/S representative should be included in any IBT discussions.

B. Food Wrap and Other Packaging

Responsibility

Job to be Done

CD (PRG)
MED (WIII)
R&D (NWT)
(JPM)

Complete work necessary for Santicizer
97 petition and submit petition -

Medical provide toxicology data

CD define specific market and
end-uses

R&D prepare film and do extraction
studies

CD write petition

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B. Food Wrap and Other Packaging (Cont'd)

<u>Responsibility</u>	<u>Job to be Done</u>
CD (PRG)	Complete work necessary for extending
MED (WHH)	S-334F regulation -
R&D (JPM)	CD define specific needs
(NWT)	R&D prepare film and do extraction studies
	CD write amended petition

Preparation of the films and their extraction in accordance with established FDA procedures is being carried out by Norm Touchette's group in cooperation with Jim Mieure/C. Brackbill. The extraction of the films has been completed and the quantitation of the extracted residues by gas chromatography scheduled. When the GC work has been carried out, I am advised that the data will be published.

C. Milking Equipment

<u>Responsibility</u>	<u>Job to be Done</u>
CD (PRG)	Estimate amount of DOP entering the environment via milking operations

Development of an analytical procedure for the isolation and determination of DOP in milk should be reasonably straightforward. We have in hand a very sensitive electron capture gas chromatographic (EC/GC) detection procedure and all that remains is the development and verification of extraction and clean up procedures.

When this methodology is in hand we can decide with the help of Paul Graham where representative milk samples should be obtained from as well as the number which should be analyzed.

D. Automotive Upholstery

<u>Responsibility</u>	<u>Job to be Done</u>
R&D (RtEK, EST)	Determine amount of vapor present under highest and average temperatures in automobile study DOP, S-711, DUP, S-79TM.

This portion of the project would require the measurement of the amount of plasticizer which is volatilized from vinyl upholstery samples at three temperatures in the range of 72°F-195°F. As I indicated, we have in hand suitable detection procedures; we would need to design an exposure chamber for these controlled temperature vaporization studies as well as suitable air sampling equipment. I have discussed this with L. Fowler and we feel that a suitable chamber can be

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fabricated from existing equipment and that this would not be a problem. Additional work would be required to verify the air sampling procedure for each plasticizer and to make the actual measurements.

The vinyl upholstery samples will be provided to us by Norm Touchette.

Responsibility

Job to be Done

MED (REtK)

Run toxicological tests on animals when exposed to this environment for extended time periods.

The above proposed study would probably involve residue work in addition to the physiological parameters normally monitored, with the vapor exposure levels being based upon the data from the plasticizer vaporization studies.

It was agreed that the study design should be worked out with IBT prior to any extensive work by Applied Sciences and that an appropriate A/S representative should participate in the study design discussions.

It is assumed that development of analytical methods for the full complement of biological tissues and fluids (fat, muscle, kidney, liver, brain, urine, and blood, would be necessary if this study is performed.

Responsibility

Job to be Done

MED (REtK)

Determine phthalate levels of human volunteers before and after repeated exposure to automotive interior.

Since human volunteers would be involved, it is assumed that only blood and/or urine would be collected for analysis.

The methods developed in support of chronic vapor toxicity studies should be readily amendable to the analysis of the human volunteer samples. The only additional work required would be to confirm the procedures and analyze any samples collected.

Any further planning on our part would require a more detailed study design, etc.

E. Floor Tile

Responsibility

Job to be Done

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R&D (RtEK,EST)
MED (REtKelly)
CD (PRG)

Confirm that the level of plasticizer vapor (S-160, DOP, S-261) in environment immediately above floor tile under use conditions at relatively high ambient temperatures is too low for concern.

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See discussion under D. Automotive Upholstery. The same chamber and analytical procedures used for this study will be applicable to this work. Additional work will be required to verify the air sampling procedures for S-160 and S-261 and to determine the vapor concentration level at three temperatures in the range of 72°F-120°F.

II. Information Required Relative to Overall Problem

A. Biodegradability Studies

Responsibility

Job to be Done

R&D (RtEK,EST)

Determine biodegradability on S-160, DOP, S-711, S-140, S-141, S-334F, DOA, S-97, S-79TM, DUP, B-16.

These studies are currently in progress and we should be able to meet the scheduled target date of 6-31-72. At this point in time, enough data will be in hand shortly to classify DOP, S-711, S-160, S-140, and S-141. We also have completed development of analytical procedures for the remaining plasticizers, with the exception of S-334F, and SCAS testing has been scheduled so that they should all be classified by 6-31-72.

We may want to consider SCAS testing of S-334F using the radio label material in hand. If we do, some method development work will, of course, be required.

- Development of in house capability to perform Rubin hydrostatic test for measuring plasticizing of blood.

It was recommended that an outside laboratory, such as IBT, be contacted about setting up to carry on this test. This recommendation was based upon the fact that we do not have any experience in handling blood.

I would also suggest, via this memo, to the recipients of this memo that another meeting be scheduled to update study completion dates, decide upon priorities, and fill in some of the details which at this point in time are missing.

E. S. Tucker

db

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