file: Vinyl chloride

Parliament Buildings,
Toronto 2, Ontario.
October 13th, 1959.

Mr. D. Scott,
Crown Attorney,
Welland County
Court House,
Welland, Ontario.

Dear Mr. Scott:

As a result of the episodes at the B. F. Goodrich plant in Port Robinson and the apparent lack of published information on the toxicology of vinyl chloride, I decided to see if arrangements could be made for conducting experiments with this material. This was arranged with staff from the School of Hygiene in Toronto. This work was conceived and conducted quite independently of any legal considerations and was really intended as research. In fact, the arrangements were discussed and the plans were made well before the legal charges were laid.

I picked up samples of vinyl chloride at the plant from Mr. Earl Clayson on February 10th, 1959. The samples consisted of a sample of vinyl chloride monomer as received by the Company and a sample of recovered vinyl chloride. These were provided freely by the Company and each sample was supplied in a pressure vessel with valves attached. It is estimated that about 10 pounds of vinyl chloride monomer was present in one container and a few pounds of recovered vinyl chloride in the second container.

The samples were transported by private car to the School of Hygiene and stored there until arrangements could be made for animal experiments. There was insufficient recovered vinyl chloride for the experiment planned and only the sample of vinyl chloride as received by the Company was used.

On April 14th, 1959 groups of 15 animals comprising 5 mice, 5 rats and 5 guinea pigs were exposed to varying concentrations of vinyl chloride in air for a period of 30 minutes. The exposures were conducted in a special animal chamber. Concentrations of 10, 20 and 30 per cent of vinyl chloride in air were used. An addendum to this letter will describe how these concentrations were calculated. An additional group of 5 guinea pigs was exposed to a concentration of 40% vinyl chloride in air on the same date. In all 65 experimental animals were involved

including 15 control animals. The control animals comprised 5 mice, 5 rats and 5 guinea pigs and these control animals came from the same animal stocks and were fed and housed in the same manner as the other animals.

A summary of the results obtained is given below:

Ten Per Cent Vinyl Chloride in Air

Mice — All were lying down at the end of 30 minutes showing tremors and twitching; recovery was quick in fresh air; no deaths.

Rats — All were lying still at the end of the experiment; recovery was quick in fresh air; no deaths.

Guinea Pigs — One was in side position; four were standing; recovery was quick; no deaths.

Twenty Per Cent Vinyl Chloride in Air

Mice — One mouse was dead; four were unconscious; recovery in fresh air took about ten minutes.

Rats — All unconscious with shallow, rapid respirations; recovery took about ten minutes in fresh air; no deaths.

Guinea Pigs — All were in side position; recovery in fresh air took about 20 minutes; no deaths.

Thirty Per Cent Vinyl Chloride in Air

Mice — All five mice dead.

Rats — All five rats dead.

Guinea Pigs — All five were alive but unconscious with shallow rapid respiration. One guinea pig from this group died after 24 hours.

Forty Per Cent Vinyl Chloride in Air

Guinea Pigs — Only guinea pigs were exposed. One was dead and four were unconscious at the end of the experiment. Another one died within 24 hours after exposure. Recovery after exposure to fresh air in those which survived was slow.

Post Mortem Examination

All animals which died as a result of exposure to vinyl chloride on April 14th, 1959 were dissected within two hours. I carried out these dissections and I made observations on the gross changes present. Various tissues were removed and preserved in five per cent formalin for later detailed

microscopic study.

The two guinea pigs showing delayed death were likewise dissected the following day.

All the exposed animals which survived were killed on April 27th, 1939 (17 days after they were exposed to vinyl chloride). I performed dissections on all of these and tissues specimens were also taken and preserved in five per cent formalin.

Control animals from the same animal stocks and housed under similar laboratory conditions were killed in the same manner and post mortem examinations conducted in the same way. There was, of course, no exposure to vinyl chloride with this group.

In general all animals which died as a result of exposure to vinyl chloride showed congestion and/or haemorrhage of the lungs and congestion of the liver and spleen. The control animals did not show these changes.

I transported the tissues preserved in formalin by car to Dr. H. Dansiger of Welland. Dr. Dansiger had agreed to prepare these sections for microscopic study, and to examine them.

Yours very truly,

"E. Mastromatteo per A.M.F."

E. Mastromatteo, M.D.,
Division of Industrial Hygiene.

Dictated but not read.

Copies to: G. Arthur Martin, Q.C.
Suite 601,
320 Bay Street, Toronto.

Professor A. M. Fisher,
School of Hygiene,
University of Toronto.

Dr. H. Dansiger,
Pathologist,
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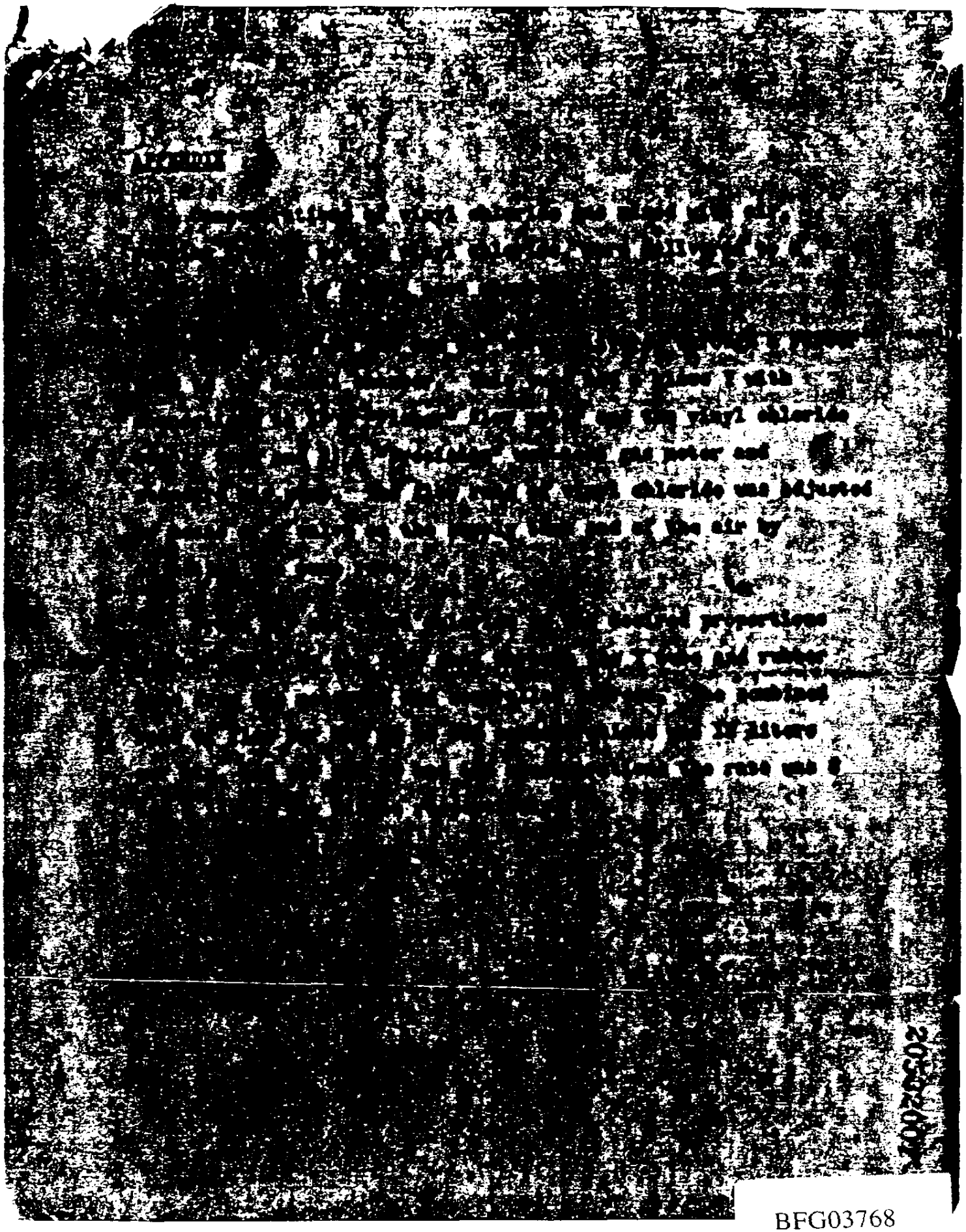

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