

DRAFT 1

TO: FILES

FROM: HILLARY R. BEARD

RE: CHRONOLOGICAL COMPILATION OF FACTS FROM THE ROBERT A. KEHOE
PAPERS, LETTERS AND DOCUMENTS.

DATE: 07/21/94

*p. 39 Paint Research
Institute*

• = Documents which are connected in a series of correspondence.

BACKGROUND

In 1925, Dr, Robert A. Kehoe was hired by the Ethyl Corporation to discover a leaded anti-knock gasoline which would not present hazards to workers exposed to the lead nor be dangerous to public health. Stemming from this research, Kehoe devoted his career to researching the metabolism of lead with regards to occupational and non-occupational lead hazards.

Due to the course in which Kehoe's research became directed, the Kettering Laboratory was established at the University of Cincinnati. The Kettering Laboratory served as the site in which Kehoe and his associates were to play an important role in the determination of lead hazards and their prevention, while furthering the field of occupational medicine and industrial hygiene.

Resulting from Kehoe's continued research to determine the metabolism and toxicity of lead, Kehoe established a reputation with industries, hospitals, doctors, and concerned individuals all over the world as one of the top sources of information about lead and its hazards, as well as the diagnosis, prevention and treatment of lead poisoning.

Published Documents

Dr. Kehoe's published numerous documents, papers, reports, and studies of lead, the "normal" metabolism of lead in the human body, hazards existing in industry and hazards to the public sector.

Attached to this document is a bibliography containing many of Kehoe's works from 1925 through 1962.(KE 01365-01375)

KEHOE'S CORRESPONDENCE

1930S

On September 16, 1930, Dr. Karl Wurth from the Institute for the Technical Investigation of Painters' Materials in Germany wrote Kehoe inquiring whether or not Kehoe and The Kettering Laboratory were involved in "any special work with the lead paint question." Wurth's inquiry questioned the "stand the American government takes toward the use of lead paints."(KE 00609)

- Kehoe replied to this letter on September 25, 1930 explaining that while Kettering was not involved directly with "the lead paint problem", there were a "number of situations in which the lead paint problem [had] been seen to be of importance." These "situations", as described by Kehoe included studies of children who had "sucked the paint from toys and beds and similar objects inside the house." In addition to problems of ingestion, "leaded" dust discovered on window sills was believed to have come from paint crumbling from the exteriors of buildings and vehicles. In response to questions on the stance of the American government, Kehoe states, "There are at present no legal restrictions upon the use of lead paints either internally or externally in houses in the United States, nor do I know of any publications which discuss the

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question thoroughly."(KE 00608)

On February 27, 1931, Kehoe wrote a letter to Morris Fishbein, an Editor at the Journal of the American Medical Association (JAMA) with respect to a syndicated article in JAMA, written by Dr. Fishbein. The article, which discusses the hazards of tetraethyllead (TEL) both in industry and to public health, also ventures to "[state] that there is little lead hazard today in the painting industry." Kehoe reprimands Fishbein's statement by pointing out that painters represent the largest group of lead poisoning cases, and spray painting is considered "among the two or three most dangerous lead hazards in existence."(KE 04314-04316)

- On March 2, 1931 Fishbein responded to Kehoe's criticisms by replying that he will "take it up in another article" (the "it" referring to the severity of lead poisoning in the painting industry. (KE 04313)

- On March 4, 1931, upon receiving Fishbein's letter, Kehoe felt the need to "substantiate" his earlier criticisms by providing statistics from the Sub-Committee on Dangerous Occupations, of the American Public Health Association (APHA). The figures provided were based on 682 death certificates of lead poisoned workers from 1925-29 in which 349 of those deaths were ascribed to painters (and 8 more to paint mixers). Kehoe also provided data from the Ohio Health Department for reported cases of lead poisoning in 1929 during which there were 13 cases from the automobile trades, painters, polishers, sanders and spray painters

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combined and 35 cases from "general paints and painters".(KE 04311-04312)

On April 28, 1931, Kehoe wrote a letter to Harry C. Mougey at the General Motors Research Corporation with respect to lead poisoning at a G.M. assembling plant. Kehoe's suggestion was that "groundcoats of paint applied to car bodies might be made without lead compounds." (The lead in question here was lead carbonate.)(KE 00203)

- Mougey wrote Kehoe back on May 7, 1931 acknowledging that lead poisoning from the use of lead paints had been a problem for G.M. He stated that "in some countries, laws have been passed prohibiting the use of lead paints...." Mougey also stated that with the proper precautions, lead poisoning could be avoided and that G.M. had not yet decided whether lead free paints or "proper supervision" would be the proper way to avoid the problem.(KE 00202)

- On May 22, 1931, Kehoe sent a letter back to Mougey, proclaiming that the question he had originally intended was whether or not Mougey believed that a truly viable lead-free paint substitute existed to adequately replace that used for the manufacture of car bodies. Kehoe also suggested that the speed of an assembly line might quickly counteract any attempts made to create a safe working environment.(KE 00201)

On November 20, 1934, Kehoe wrote a letter to F.R. Stoner of Stoner-Mudge, Inc. requesting information on the lead content of

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coatings produced by Stoner-Mudge.

- On November 28, 1934, Stoner sent Kehoe this information with respect to "white, or tinted coatings" and "black coatings". The "white roller coating lacquer" to be used for the inside and outside of food container caps would contain 2% of Lead Oxide (lead sublimed) while the black coating would contain 1.58% of lead. Stoner insists that these levels on coatings would not be injurious to health because the "lead could not be drawn from the coating." (KE 00155-00157)

- Kehoe responded to Stoner's letter on 12/3/34 stating that he considered that these proposed levels for coatings in food containers would pose no real health hazard. (KE 00158)

On 12/22/36, V.A. Zimmer, Director of the Division of Labor Standards and the U.S. Department of Labor sent Kehoe a copy of "Recent Changes in the Painters' Trade" by Dr. Alice Hamilton. The paper contains information regarding "prevention of the occupational hazards arising in the painters' trade." (KE 00621)

- Kehoe wrote Zimmer back on 12/29/36 and thanked him. (KE 00622)

On November 23, 1938, T.J. O'Keefe from the Claim Department at Anaconda Wire & Cable Co. wrote to L.A. Shaner, the Assistant Adjustor at The Travelers Insurance Company in Indianapolis with respect to "B-3982061/Anaconda Wire & Cable Co./Re: Lewis H. Wilson. This letter confirms that Kehoe would visit the plant in Marion, Indiana and would also be willing to "testify in event of

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trial."(KE 03999)

- Attached to the back of this letter, although obviously separate, are a group of notes, presumably written by Kehoe outlining the case presented in the 11/23/38 letter. The case in question regards Lewis Wilson who originally claimed to have symptoms of lead poisoning in September, 1936. Travelers refused the claim, and there was "no neglect on part of Anaconda." The notes cover the history of claims made by Wilson, and it seems that his job was related to the heating of lead.(KE 04400-04401)

- On December 13, 1938, Kehoe received a letter and payment from L.A. Shaner at The Travelers for services rendered in the case of Anaconda Wire & Cable Co. re- Lewis Wilson. The jury found Travelers to be liable for \$8,000.00 for Wilson's recovery. Shaner also relayed that he would write Frank Hart at Anaconda Wire & Cable in Marion to pass on Kehoe's "offer of assistance in remedying the occupational conditions which may exist in connection with the lead operations at their plant."(KE 04397)

J.M. Looney at the Department of Mental Diseases, Worcester State Hospital, wrote Kehoe on February 14, 1934 requesting "various articles on lead poisoning." Looney had the results of tests in the case of an infant who had chewed paint off his crib. (KE 00954)

- Kehoe returned the requested reprints to Looney as well as information regarding the distribution of lead in lead poisoning. (KE 00953)

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Sometime in 1938 (the date is illegible), Kehoe wrote a brief paper entitled Industrial Lead Poisoning. Kehoe discusses the fact that in the lead industries there had been a marked decline in the number of lead poisoning cases. This decline came in conjunction with new hygienic precautions in the different industries. Kehoe also states that industries must be willing to "abandon certain processes in favor of others which can be controlled more satisfactorily." The example which Kehoe uses to illustrate this is "the Old Dutch process [which] is employed for the manufacture of a type of white lead which is regarded in some circles as superior to that obtained by other methods of manufacture." Kehoe's point is that a suitable substitute would be safer and more cost-efficient than equivalent safety measures which would be necessary in making the "Old Dutch process" acceptably safe. Kehoe also presents a chart of data reported by Frederick L. Hoffman in "U.S. Department of Labor Serial No. R. 669" which presents the "Occupational Distribution of Cases of Plumbism in the Year 1935." What this chart shows is that there were 130 cases of lead poisoning deaths in the U.S. in 1935, 34 of which were "Non-Occupational (mostly children)" and 36 of which were painters, 6 paint workers, 10 Lead workers, etc. (KE 01690-01695)

On February 23, 1938, Kehoe received a letter from A.J. Lanza, the Assistant Medical Director at Metropolitan Life Insurance Company. Lanza was planning to giving a talk on the influence of lead poisoning on mortality, and he asked Kehoe for related

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information.(KE 00888)

- Kehoe wrote Lanza back on March 18, 1938 stating that he did not have specifics with respect to the effects that lead poisoning had on mortality. But, he did comment that he had "seen several fatal cases of lead poisoning in children as the result of ingesting lead from toys [and] play pens.(KE 00889-00890)

- Lanza wrote Kehoe back on 3/21/38 to thank him for his letter. (KE 00887)

On April 22, 1939, Kehoe wrote a letter to G.H. Gehrman at E.I. duPont & deNemours Co. Kehoe had just examined a man employed in "spraying lacquers in the manufacture of x-ray equipment." The lacquers used by "this plant" were a black lacquer produced by the Zapon Brevolite Division of the Atlas Powder Company and a "white lead-containing lacquer together with an ivory one." Kehoe was requesting information regarding this particular case. (KE 00326-00327)

- Presumably stemming from the Anaconda Lewis Wilson case, Kehoe did a report entitled, Magnitude of Lead Exposure in Marion, Indiana Plant of Anaconda Wire & Cable Company. Kehoe analyzed the hazards connected with the melting pot at which Lewis Wilson had worked. Kehoe actually found that the environmental conditions surrounding the melting pot, with respect to lead, were not hazardous to workmen. (KE 04409-04411)

On September 29, 1939, Kehoe received a letter from B.B. Reeve at Standard Oil in which Dr. Reeve requested information about

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"lead in our spray paint." Dr. Reeve says that

The paint we obtained is called lead free paint, but the various companies which put this put (sic) claim that due to the mixing of the paint in containers that had previously been used for lead paint, a certain amount of lead content will be found in the lead free paint if tests are made. (KE 01174)

- On October 5, 1939, Kehoe wrote Dr. Reeve stating, "Our own experience with so-called lead-free paints has been that the expression is used somewhat loosely." (KE 01173)

An undated document entitled The Diagnosis of Lead Poisoning in the Light of Recent Information was written by Kehoe presumably sometime during the late 1930s (as the bibliography dates up through 1935). Kehoe states,

There is every reason for suspecting the existence of significant and dangerous lead exposure in the case of children with a history of pica. The occurrence of lead-containing commodities and the use of lead paints on furniture, toys, and other objects, within the reach of small children is much too common to ignore. (KE 006258-00634)

1940s

On March 9, 1940, Felix Wormser of the Lead Industries Association (LIA) wrote Kehoe about an article which had been published in J.A.M.A called "Toy Dishes and Plumbism" by Rathmell and Smith. Wormser found the article to be too definitive in its qualification of the manners in which children could be exposed to hazardous amounts of lead.

- Wormser again wrote Kehoe on 3/23/40 to buttress the

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argument that the statement in the Rathmell article with respect to aluminum toys causing the lead poisoning of a child could not be true. Wormser also sent Kehoe a copy of a publication of the Commonwealth of Pennsylvania, Department of Labor and Industry, entitled, "Molten-Lead, Lead Oxides, White Lead and Lead Dry-Colors."

- On May 2, 1940, Kehoe wrote Wormser to thank him for the article, "Molten-Lead, Lead Oxides, White Lead and Lead Dry-Colors."

On October 1, 1940, Earle Webb, president of the Ethyl Gasoline Corporation received a letter from Norman Holland, president and managing director of Brandram-Henderson, Ltd., which manufactured paints, varnishes, enamels, dry colours, and white lead and claimed to deal "largely in white lead." Holland had been faced with a couple of cases of alleged lead poisoning which he believed to be fabricated, and he was hoping that Webb had already developed specific criteria for dealing with lead hazards and determining lead intoxication. (KE 00475-00476)

- W.F. Machle, from the University of Cincinnati General Hospital was sent a copy of this letter and asked to respond to it. His response was not included. (KE 00477)

On January 16, 1941, William Ashe, an associate of Kehoe's from the Kettering Laboratory, attended a meeting of the employees of The Lowe Brothers Company, a division of Sherwin-Williams, in Dayton, OH. In speaking with the workers, Ashe stated that hazards

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in the plant had been reduced, proper ventilation was being looked into, and that he believed the present conditions in the plant to be safe. But Ashe also warned that the "avoidance of exposure to dangerous chemicals now lies with you men." The scenario which Ashe put forth was presented as such:

Suppose a fellow is working in the mixing room and he is emptying pigment in the vat and it is a hot summer day and he is sweating and from time to time he wipes the sweat off his face with his hands. He may have a good deal of pigment on his hands which gets into his mouth. That is something no amount of prevention will prevent, unless you fellows take care of it yourselves.

Ashe then went on to say that the "job of personal hygiene, keeping clean, keeping these things out of your mouth and out of your nose, is entirely up to you fellows from now on." Donald Kohr, President of Lowe Bros., who was also present, concluded the meeting by stating, "If you eat lead and drink the various materials and get sick, that is your fault, not ours." (KE 01910-01915)

On July 31, 1942, William Bradley, an industrial hygienist at the Detroit Bureau of Industrial Hygiene wrote Kehoe asking for "normal" values for lead in blood or in urine of infants and small children. (KE 04306)

- Kehoe wrote Bradley back (8/4/42) referring him to the Journal of Industrial Hygiene, volume 15, page 301, (1933). The types of cases of childhood lead poisoning which Kehoe mentions and with which he had been confronted were mostly due to "swallowing lead compounds", although a few of the cases resulted from the

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inhalation of fumes. (KE 04304-04305)

E.B. Read, plant manager at the Univens Lens Company wrote to Kettering on 9/30/42 with regards to an employee who had been admitted to the Miami Valley Hospital in Dayton and who had been diagnosed with lead poisoning. The girl had been employed in painting the edges of "high index glass" with "a brush dipped in white lead paint." Read explains,

The girl who is ill is one of six girls who has been in the habit of running her brush between her lips to put a point on the brush so that she can assemble more lenses. We have warned all of the girls many times not to put the brushes in their mouths but this one girl and five others still do this from time to time.

Read's question to Kehoe is how one actually "[contracts] this poisoning." (KE 01184-01185)

- Kehoe responded to Read by letter on October 7, 1942 affirming that it would be entirely possible for the girl to have lead poisoning, and expressed his shock that she would purposefully put a white lead covered paint brush in her mouth. Kehoe advises Read that he needed to provide proper and numerous washing facilities for the girls to remove any paint from their hands, and that Read should issue both written and word-of-mouth warnings that the practice of putting white lead coated brushes in one's mouth would be punishable by "prompt discharge."

On January 19, 1944, Felix Wormser wrote Kehoe about a Time magazine article entitled, "Paint Eaters" which had been derived from a much lengthier report from the American Journal of Diseases of Children (AJDC) called "Late Effects of Lead Poisoning

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on Mental Development." Wormser's intended purpose in sending Kehoe this letter was to condemn the facts presented by the report, thereby discrediting both the article and the report. (KE 03431-03434)

- Kehoe responded to Wormser's letter on February 2, 1944 by stating that he actually found the conclusions made by the report to be "worthy of serious considerations." Part of Wormser's argument had been that manufacturers no longer paint toys or cribs with lead-based paints. Kehoe however makes the point that while that may be true, "the householder repaints these articles, and often with lead-containing paints." Kehoe continues by qualifying the fact that most childhood cases of lead poisoning stem from pica. Kehoe refers here to the "data on lead poisoning in children in Queensland" which were "largely due to chewing the paint off railings of the porches on which the children played." (KE 03435-03438)

During the May 10, 1944 board of directors meeting of the AIHA, the subject of the "Labeling Committee" and the "status of the labeling problem" (primarily with respect to labeling solvents). (KE 03349)

On November 9, 1944, D.D. Irish, from the Biochemical Research Laboratory at The Dow Chemical Company wrote Kehoe about the idea of giving a paper at the spring meeting of the American Industrial Hygiene Association (AIHA) on the "subject of caution labels and the general problem of getting across to the user the proper

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information concerning the handling of the compound." Irish also refers to the labeling committee of the AIHA and of the M.C.A. (KE 03208-03210)

- Irish wrote Kehoe again on 1/3/45 requesting that he not have to give a paper at all at the Spring AIHA meeting.

On May 23, 1945, F. William Sunderman, M.D. from the Hospital of the University of Pennsylvania sent a letter to Kehoe with the history of Lamar Battle. Lamar Battle was a 41 year old painter who during the previous year had been employed by the Sun Ship Company in Chester, PA where Battle used lead paint in a spray gun and was also exposed to dry lead paint dust. Sunderman states that Battle may have had a mild case of plumbism, but did not have sufficient degrees of lead in his system to be lead poisoning. (KE 00137-00138)

- K.V. Kitzmiller, an associate of Kehoe's from Kettering wrote Sunderman back simply returning the results from tests done by Kettering on Battle's blood. No particular qualification was made except that Battle's blood was only slightly above the normal values range. (KE 00139-00140)

On June 14, 1945, Kehoe received a letter from L.A. Maston, a government analyst at the Government Chemical Laboratory in Brisbane, Australia. Maston explains that the Queensland Department of Health is

very active in reducing the lead hazard in foodstuffs, paint, toys, crayons and tobacco. In Queensland, no person shall use or put any lead containing more than five per cent of soluble

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lead upon any part of a house, rail blind, gate or fence to which children under the age of fourteen years have easy access.(KE 00180)

On August 17, 1945, R.L. Gorrell of the City-County Health Unit in Trinidad, Colorado wrote Kehoe requesting information about signs and symptoms of lead poisoning, the use of lead paints on children's toys, and lead poisoning treatment. (KE 00346)

- Kehoe wrote Gorrell back (9/5/45) and sent him a copy of an A.P.H.A. publication. He also expanded on the problem of lead poisoning in children. Kehoe stated that generally manufacturers of children's toys, play pens, high chairs and other furniture had systematically avoided the use of lead paints for a number of years. "It happens however that small shops do not always recognize this situation, and therefore there may be a small distribution of articles of this type painted with lead paint." What Kehoe explained was that the problem was found primarily in

other sources of lead absorption,... For example, baby's cribs and play pens may be repainted by the owner, and here there is nothing but the owner's knowledge, combined with the chance of what is available in the local paint market, to prevent the use of paints of high lead content. (KE 00344-00345)

- On September 11, 1946, Kehoe received a letter from Dr. Gorrell about his letter of 9/5/45 requesting permission to publish it in a Medical News Column.

- Kehoe responded to Gorrell by saying that he would like a copy of his letter to edit. (9/17/46)

- Upon discovering a copy of the letter and perusing it, Kehoe agreed to let Gorrell publish it. (10/10/46)

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- Gorrell acknowledged Kehoe's permission and published Kehoe's letter. (6/16/46)

On June 20, 1946, Ann Leichliter Munn wrote a letter to Mrs. Vanderbuilt Webb at the American Craftsmen's Educational Council in New York City. Mrs. Munn had used sheet lead for certain decorative purposes (making chests), and she wrote an article for Craft Horizons entitled, "Using Sheet Lead As A Decorative Medium" in which she extolled the manners in which she found sheet lead to be useful. Her article was received with horror by some who felt that she had undervalued the dangers which accompanied the uses of leaded materials. Her June 20th letter to Mrs. Webb was sent in response to letters which had been written attacking her article. The letter acknowledges her own awareness of the dangers which accompany the use of sheet lead.

- The letters in question which attacked her article were sent by readers of Craft Horizons. The first letter was sent by a Miss Francis Fuller who elaborated on the symptoms which accompany lead poisoning as indicative of why the "casualness with which she [Mrs. Munn] mentions the danger" is "[appalling]".

- The second letter was sent by William Slough of the American Craftsmen's Educational Council.

A child could quickly become ill by just having rubbed his tiny hands several times over the design on her attractive chests and then putting his fingers in his mouth for a moment," Slough warns. "House painters get what is known as 'painter's colic' from having absorbed white lead thru the skin.... It would be wise to publish a more definite warning against the use of lead for art purposes, especially when in the hands of the average person. It

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is no joke to have offered a dangerous medium, with possible death from its use. (KE 00309-00311)

- As a direct result of the letters in question, Henry Gilman from Iowa State College of Agriculture and Mechanic Arts sent a letter to George Calingaert at the Ethyl Corporation Research Laboratories(7/2/46). Mrs. Munn, after having taken precautions while working with the lead, wanted to know if there was some form of a protective coating she could employ to "reduce the danger of exposure or contact with the lead once the art object [had] been completed."(KE 00307-00308)

- George Calingaert then sent a letter to Kehoe on July 8, 1946 enclosing Dr. Gilman's letter and requesting his comments on the uses of sheet lead for decorative purposes.(KE 00306)

- On July 16, 1946, Kehoe sent a letter directly to Dr. Gilman. Kehoe's main comment was that metallic lead or lead compounds which exist in the environment of small children do present safety hazards due to the habit common in small children of touching things and putting either the things or their hands into their mouths. "Obviously," Kehoe warned, "this applies to household decorations, toys, play-pens, beds, high chairs, kitchen and table implements, and the like." In terms of adults and possible exposure, Kehoe warned against exposure to fumes or dust and against various procedures of handling lead which might be hazardous such as welding, cutting with heat, soldering, melting operations, and all of such procedures."(KE 00303-00305)

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- On July 18, 1946, Kehoe received a thank you note from Dr. Gilman.

On November 25, 1946, Kehoe received a letter from L.J. Nye at the Brisbane Clinic. Nye was reporting on his findings in Australia with respect to lead paint. He stated:

When houses were painted with lead paint there was an extraordinary incidence of acute and chronic lead poisoning in children.

Nye attributed this poisoning to a combination of the hot climate which caused the "[desiccation]" of paint and the occurrence of "powdered lead carbonate" and to the verandas painted with lead paint on which the children were often penned. As a result of the Nye research, "the Government [enacted] stringent legislation preventing the use of lead paint in places accessible to children."

(KE 01038-01039)

A report, written by Kehoe in February of 1947 entitled "Exposure to Lead" refers on p.10 (KE 01769) to a table which covers the "Variation of the Mean Concentration of Lead in the Blood of Groups of Persons in Accordance with the Severity of Their Occupational Lead Exposure." Color manufacturing and white lead manufacturing were considered to be "hazardous" while lead smelting was "highly hazardous." In each occupation, Kehoe based his data on particular control groups, and the average values of lead, in terms of milligrams per 100 grams of blood were by far the highest in these three occupations. (01760-01775)

- In response to the paper, "Exposure to Lead", a

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discussion ensued among those present at the Conference on Lead Poisoning. The discussion was begun by Dr. John McDonald from Baltimore who, with reference to cribs as possible lead hazards, stated,

What happens is that the paint wears off, and it is in the re-painting that danger occurs.

When a case of children's lead poisoning is reported to us, we make an effort to get a sample of that which the child has been nibbling. We bring it into our laboratory and we have it analyzed for the presence of lead.

The next time Mr. Wormser comes to Baltimore, I will show him a re-painted crib which caused at least three cases of lead poisoning. (LIA38038)

- Wormser responded to Dr. McDonald by stating, "So far as white inside paint is concerned, there is no lead in it."

- Kehoe spoke next. In an attempt to widen the scope of the conversation and to move away from the specific problem of re-painted cribs as a source of lead poisoning among children, he stated,

More lead poisoning in children has occurred than we like to think about. The number that are actually reported in medical literature have very little relationship to the number that actually occur.

Lead poisoning in a child is a serious disease. A fair proportion of them do not recover. We have on record in our own files from 1935 to 1946 twenty-eight proved cases of lead poisoning in children, with six fatalities. (LIA38039)

On February 14, 1947, Kehoe received a letter from Dr. N.B. Herman requesting information about "the lead hazard in men doing brush painting alone and no spray painting." (KE 01008)

- Kehoe wrote Dr. Herman back on February 20, 1947

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confirming Herman's belief that brush painting contains appreciably fewer hazards to the painter than spray painting. Kehoe commented that the "use of lead paints has been very greatly diminished in recent years." He then continued to state that the hazards to a brush painter exist in other circumstances. For example, if the

painter gets paint on his hands, his tobacco, and his food, and thereby ingests considerable quantities of lead unnecessarily.... The hazard to the regular painters occurs chiefly in connection with exterior paint, in which white lead is the principle pigment. (KE 01006-01007)

On March 1, 1947, Kehoe sent a letter to L.J. Nye at the Brisbane Clinic regarding his skepticism about the connection between lead poisoning and kidney disease or arteriosclerosis. (KE 01036-01037)

- Nye sent Kehoe a letter back on March 17, 1947 providing his reasons for connecting chronic nephritis with lead poisoning. His research primarily stemmed from the general use of lead paints which had tended to powder after two or three years because of the heat conditions in Australia. In conjunction with the use of lead paint is the continual exposure of young children to these powders as the powder stick to fingers and such and is easily inhaled and ingested, and often came from verandas where children had been penned up for a number of hours each day. Nye then commented that

lead poisoning amongst children is now rarely if ever seen. This I attribute to many factors which I mention in my book such as prohibition of the use of lead paint in places accessible to children. (KE 01034-01035)

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On March 28, 1947, Kehoe sent a letter to Dr. Roger Heering, Director of Health at the State of Ohio Department of Health regarding occupational hazards at the Magnus Metal Division of the National Lead Company. Kehoe stressed the need for compensation of already lead intoxicated men as well as precautionary measures to eliminate or minimize the lead hazards within the plant for the workers who had continued their employment at Magnus. (KE 02139)

- Thomas Mancuso, Chief of the Industrial Hygiene Division at the Ohio Department of Health replied to Kehoe's letter on April 3, 1947 outlining the overtures which had been made to the National Lead Company with respect to the existing lead hazards in the Magnus Metal plant between 7/16/46 and 4/3/47. Mancuso acknowledged that the reports of both Henry Ryder, an associate of Kehoe's at Kettering Laboratory, and Kehoe bring to light severe lead hazards at the plant in question, but apologized for the dearth of proper facilities at the Ohio Department of Health to "conduct such investigations" or to provide the necessary "industrial hygiene services." (KE 02134-02138)

On October 6, 1947, Kehoe received a letter from Alex Stewart at the National Lead Company Research Laboratories about the "possibility of developing a program of study in connection with the toxicity of paint films." (KE 02150)

- Kehoe wrote Stewart back, (10/11/47) regarding such a possibility. (KE 02149)

- On January 7, 1948, Kehoe sent a letter to Mr. Stewart

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expressing a desire to "attract the interest of lead industries in certain fundamental investigations." The letter also dealt with a joint endeavor between National Lead and Kehoe regarding "The Toxicity of Paint Films, including Solvents, Vehicles, and Pigments." (KE 02145-02148)

- On September 22, 1948, Stewart sent a letter to Kehoe regarding the "toxicity of materials employed in the production of paints" and attaching the "Proposed Program on the Toxicity of Paint Materials." The Proposed Program included a "literature survey of the toxicity of paint materials" and a "study of the toxicity of selected pigments" (including Basic Carbonate White Lead, Basic Sulphate White Lead, and Basic Silicate White Lead). Also enclosed in Stewart's letter were "Proposed Additions" by W.A. Gloger (9/17/48), the purpose of which was

to make the proposed program of study of the toxicity of paint materials apply more directly to the conditions prevailing within the paint division and its ultimate customers.... With respect to the customers of the paint division, consideration should be given to the effects on painters and home owners, of the volatile portion of paints, particularly with respect to its effect on very young children and semi-invalids. (KE 02156-02159)

- On February 7, 1949 Kehoe sent Stewart a letter regarding their "consulting relationship," expressing a desire to "[promote] our educational program" and enclosing a copy of the potential agreement between National Lead and Kettering Laboratories. (KE 02151-02154)

On April 12, 1949, Kehoe received a letter from B.B. Reeve, the Medical Director at Standard Oil with regard to a

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correspondence of 10/5/39 and 9/29/39 (KE 01173-01174) wondering about the "safe maximum lead content for paints used for spraying purposes." (KE 01172)

- Kehoe replied on May 4, 1949 to Reeve's inquiries by elaborating on the hazards involved in spray painting, and suggesting preventative measures which should be taken. (KE 01170-01171)

On June 17, 1949, Kehoe received a letter from Mark Westgate at the National Paint, Varnish and Lacquer Association regarding the Maryland Toxic Finishes Law (6/1/49) which states:

It shall be unlawful for any person to manufacture, sell or offer to sell, any toy or plaything, including children's furniture, decorated or covered with paint or any other material containing lead or other substance of a poisonous nature, from contact with which children may be injuriously affected.

Westgate's inquiry lay in the "proper interpretation" of the law. (KE 00559)

- On June 30, 1949, Kehoe replied to Westgate's letter acknowledging the difficulties in interpretation of the law in question. Kehoe simplified it by stating that with reference to paints used on interior surfaces and furniture, they should contain "no more than traces of lead in their composition." (KE 00557-00558)

- On July 7, 1949 Westgate thanked Kehoe for his suggestion and asked if he could quote him on the subject. (KE 00556)

On October 27, 1949, Kehoe received a letter from T.L.

- = Documents which are connected in a series of correspondence.

Henderson from the Good Housekeeping Institute regarding the quantities of lead and other hazardous substances which should be allowable in "finishes that would be applied to children's toys, furniture, etc." (KE 01011)

- Kehoe replied to Henderson's letter on November 22, 1949 stating that the

child is likely to strip all of the paint from the surface of objects in his vicinity, including window sills and the like....
~~In general the elimination of lead pigments from paints for this purpose would be quite satisfactory,...~~ In fact, I am not so much concerned about the use of paints containing these low percentages of lead as I am about the fact that the ordinary householder who decides to repaint the baby's bed or play pen goes and buys the nearest paint of the right color that he can find.

Kehoe's final analysis is that "we need general public education."
(KE 01009-01010)

While it is unclear as to when these studies were published, there is reason to believe that they were released during the late 1940s or early 1950s. Kehoe produced a series of "Studies in Lead Excretion." The studies included occupations which involved the inhalation of lead dusts, as well as the ingestion of lead-containing substances (most particularly evident in children chewing lead-containing objects). The list of tables included a "Distribution of White Lead Workers According to Lead in a Single Sample of Faeces," "Lead in Faeces as a Result of Ingestion of Lead," (using two children with histories of pica) and a "Distribution of White Lead Workers According to Lead in Urine."
(KE 01591-01610) and connected tables (KE 01271-01279)

- = Documents which are connected in a series of correspondence.

- Most likely in connection with the above discussed studies, Kehoe wrote a chapter (also undated) entitled "The Magnitude of Clinically Significant Exposure to Lead Compounds, Lead Absorption, and Lead Excretion in Certain Lead Trades" in which he discussed "The Lead Excretion of Workers in a White Lead Manufacturing Plant." Kehoe stated,

The exposure to lead dusts in a white lead plant may reach a considerable magnitude in all parts of the plant, or it may be limited largely to a few processes through careful and rigidly enforced segregation of space and employees. (KE 01265-01270)

1950s

On January 23, 1950, A.F. Lecklider, the Medical Director at the Fisher Body Division of General Motors sent a memo to "Medical Directors" re: the "1949 Lead Experience - Fisher Body Division." The report arrived at the conclusion that "All plants doing body assembly have a definite lead hazard which requires careful medical control" due primarily to "fine lead dust." (KE 00877-00880)

- On February 14, 1950, Lecklider sent a letter to Kehoe attaching a copy of the 1/23/50 memo and expressing his optimism of eliminating the problems of lead poisoning in the Fisher Body Division. (KE 00876)

- On April 14, 1950, Kehoe received another letter from Lecklider regarding possible comments on the proposed lead control procedures in a booklet created by Lecklider for the Fisher Body

• = Documents which are connected in a series of correspondence.

Division. (KE 00875)

- On April 21, 1950, Kehoe wrote Lecklider back expressing an additional need for engineering and protective preventive measures in addition to the proposed medical ones. (KE 00873-00874)

On December 12, 1950, Manfred Bowditch from the LIA sent a letter to Kehoe regarding previous letters (12/12/50 and 11/08/50) which had been sent to a Dr. Weech at the Cincinnati Children's Hospital with respect to parental education and the childhood plumbism problem in Cincinnati. The 12/12 letter had enclosed with it a paragraph from the National Safety Council on "Reports of Childhood Plumbism" to "find effective preventive means." The letter of 11/08/50 raises the issue of increased cases of childhood plumbism in the Cincinnati area. (KE 03522-03525)

On February 14, 1951, Kehoe sent a letter to a Dr. Robert Kotte, enclosing data gleaned from the years 1928-1950 with regards to cases of childhood lead poisoning. Kehoe commented that,

The problem, therefore, is not so much that children chew things, but that there are things in their immediate environment which offer opportunities to yield considerable quantities of lead. ✓

With reference to a booklet which Kotte apparently sent Kehoe for his comments and approval, Kehoe states,

I am particularly interested in seeing to it that the booklet that is issued has wise and practical information which can readily be followed in the household.

The data which Kehoe included were "Cases of Lead Poisoning in Children Recorded by the Kettering Laboratory by Years." The

- = Documents which are connected in a series of correspondence.

comment was made that "paint form toys, furniture, woodwork in houses, porch railings and unspecified sources was incriminated sometimes by implication only." (KE 00825-00827)

- Manfred Bowditch sent Kehoe a brief note thanking him for his "helpful attitude on the childhood plumbism matter" and sounding optimistic that between Kehoe and Kotte, "we ought to go places." (KE 03526)

At a session of the Massachusetts Medical Society (05/23/51), George Wheatley, Third Vice-President of Metropolitan Life Insurance Company gave a paper entitled, "Can Accidental Trauma Be Prevented?" (KE 03539-03548) Of accidents related to poisoning, lead poisoning is generally attributed to

lead-containing paint on window sills, play yards, toys, etc., which have been repainted by amateurs.... Prevention must be centered chiefly on educating parents about the danger of permitting children to chew or suck on painted objects or surfaces. (KE 03543)

On August 7th, 1951, Bowditch sent Kehoe a letter regarding the testing of six samples of lead stabilizers (N.L. Co. Plumb-O-Sil, N.L. Co. DS-207, N.L. Co. Normasol, N.L. Co. Tri-Mal, MacGregor "Basic Carbonate" and Eagle-Picher "Basic Silicate"). (KE 01970)

- With respect to this "Lead Industries Association Project", Raymond Suskind sent Kehoe a memo asking for information about the "basic silicate, white lead, and dry carbonate." (KE 01971)

- On August 9, 1951, Kehoe sent a letter to Bowditch

• = Documents which are connected in a series of correspondence.

requesting "corresponding information on the white lead and the dry carbonate." (KE 01969)

- Bowditch replied to Kehoe with respect to "the white lead and the dry carbonate", correcting Kehoe that they are the same substance. (KE 01967-01968)

On August 9, 1951, Kehoe sent Bowditch a letter about the "progress" in cases of Cincinatti childhood lead poisonings. (KE 03536-03537)

- On August 14, 1951, Bowditch sent Kehoe a letter regarding the childhood lead poisoning problem and enclosing two recent reports of specific cases. (KE 03530)

- (07/23/51) Dr. Clarence Maloof sent a report to Randolph Byers at the Longwood Medical Building in Boston regarding Karin Searles, a 2-year old girl who had begun to "chew on furniture about the house" at the age of one. (KE 03531)

- (08/07/51) Maloof sent another report to Dr. Byers regarding Kenneth Derouin, a four-year old who had chewed on his crib and on window sills from the time he was two and a half until he was three. Recently he had been found eating paint chips from a hole in the wall. (KE 03532-03533)

On August 22, 1951, Robert Kotte sent Bowditch a letter enclosing information on lead poisoning cases in children during 1951, and he furnished Kehoe with a copy. With respect to confirming the histories of the cases, Kotte commented, "Houses have received over period of many years many coats of paint." The

- = Documents which are connected in a series of correspondence.

data enclosed refers to five children between the ages of one and four who had died of lead poisoning. (KE 03527-03529)

On May 21, 1952, L.H. Hergesheimer, plant physician for National Lead sent Kehoe four specimens of blood and urine for examination. (KE 01997-02005)

On May 24, 1952, Kehoe sent a letter to Bowditch passing on a request which can to him from Dr. Aage Grut of the International Labour Office in Geneva asking for the "extent to which manufacturers and distributors of white lead in this country supply white lead in pulp, rather than in powder form, to paint manufacturers and other users of the product." (KE 02814)

- (05/26/52) Bowditch promised Kehoe that the requested information would be forthcoming. (KE 02813)

- (06/04/52) Bowditch sent Kehoe a report from the Bureau of Mines on which he

marked the figures for the last four years on U.S. shipments of white lead, both dry and in oil.

An informed official of the National Lead Company tells us that practically all white lead (carbonate) shipped in dry form goes to the paint manufacturers, with relatively small amount to the ceramics manufacturers, while that shipped in oil goes to the paint-using trades. (KE 02812)

On October 17, 1952, Bowditch sent Kehoe a blind copy of a letter which he had sent to William Lussky, vice president of Progress Paint Manufacturing Co. in Louisville, Kentucky. Lussky's letter to Bowditch must have involved the possible poisoning of cattle due to the chewing of dried paint. Bowditch stated, "White

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lead paint is unquestionably toxic," and referred Lussky to Kehoe for a more complete answer to his inquiries.

On November 3, 1952, Henry Gilman sent Kehoe a copy of a letter which he had sent to George Calingaert (10/27/52) with respect to the possibility of cattle becoming lead poisoned by licking barn walls which had been coated in lead-containing paint. (KE 00795-00796)

- Kehoe responded to Gilman's letter on 12/18/52. Kehoe briefly touched on the issue of cattle poisoning, and then returned to the issue of childhood lead poisoning stating that several hundred cases were occurring annually in the U.S.A., blaming the "ingestion of paint from a variety of sources in the immediate environment of the child." (KE 00798-00799)

On February 5, 1953, Kehoe received a letter from Dr. Charles Jackson from the Caylor-Nickel Clinic in Bluffton, Indiana with regard to a patient who had been diagnosed with lead poisoning "from mixing white paint." (white paint? or paint with white lead?) (KE 00295)

- Kehoe wrote Jackson back replying that such types of exposure are not unusual. Kehoe requested the "full story of this case and the clinical information" in order to give more useful advice. (KE 00294)

On April 6, 1953, Kehoe received a letter from C.F. Taliaferro, chief claims agent at Atlantic Coast Line Railroad Company regarding a case pending against them. The case involved

- = Documents which are connected in a series of correspondence.

a painter whose symptoms were spread out over a span of six years (1945-1951). Taliaferro claims,

We have handled with a large number of manufacturers of paint from whom we make purchases, and we were advised by one of the manufacturers that in some instances they have referred cases of this kind to you. (KE 00507)

- Kehoe responded to Taliaferro on April 17, 1953 in which he essentially refuses to "[engage] in this type of medico-legal work." (KE 00505-00506)

In December of 1953, the American Standards Association (ASA) established a Sectional Committee on Hazards to Children (Z66), a Subcommittee of which was set up for Safe Labeling of Coatings For Children's Toys and Furniture and sponsored by M. Bowditch. The purpose of this committee was to "establish standard specifications for safe coatings (paints, enamels, lacquers, etc.) for children's toys and furniture and for labeling such coatings in accordance therewith." (KE 03576-03577)

On October 28, 1954, Bowditch sent Kehoe a letter requesting a copy of the "tentative ASA Standard on paint labeling." (KE 02851)

- In his reply of January 8, 1955, Kehoe simply stated, that "the American Standard for labeling toys is good and should serve a highly useful purpose." (KE 02852-02853)

On February 21, 1955, Kehoe sent a letter about childhood lead poisoning statistics to Dr. Adrien Ver Brugghen. Kehoe stated that he had "induced the people at the Children's and the Cincinnati

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General hospitals to begin to get their data together so as to publish a series of articles on their cases." (KE 04300-04303)

On May 27, 1955, F.C. Gaugash, Director of Safety at Sherwin-Williams, sent a letter to Dr. Carl Peterson at the AMA requesting information regarding a porphyrin test on men who had been exposed to lead oxides and lead chromates. Dr. Peterson referred this letter to Kehoe (06/20/55). (KE 00783-00785)

- Kehoe replied in a letter to Gaugash (06/23/55) that he would not advise switching to porphyrin testing, and subsequently advised that other factors such as environmental control are just as important as medical examinations. (KE 00780-00782)

On October 26, 1955, J.T. Beckwith, Ethyl Corporation sent a letter to Kehoe, enclosing an article which had been published in the June, 1955 issue of Greater Minneapolis, official organ of the Minneapolis Chamber of Commerce and which the Mine Safety Appliances Company distributed entitled, "Lead is Dangerous!" The article referred to lead-containing paints. (KE 01869-01873)

Between November 7-11, 1955, Robert Ziegfeld, Secretary, LIA, presented a paper at a Postgraduate Course of Physicians on "Modern Considerations and Methods in Handling the Lead Problem in Industry" at the Institute of Industrial Health, Cincinnati entitled Industrial Importance and Uses of Lead. As a part of his data, Ziegfeld stated that 19,000 tons of white lead were consumed by the various lead industries in 1954. With reference to the Paint Industry (KE 01708-01709), Ziegfeld noted that it consumed

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38,000 tons of lead in 1954, and he described the uses for white lead and the manner in which it was manufactured. Ziegfeld also separated the Colors Industry from the Paint Industry, as a consumer of 19,000 additional tons of lead. (KE 01702-01712)

On January 27th, 1956, Brian Taylor of the Broken Hill Associated Smelters Proprietary Limited sent Bowditch a letter regarding the Australian Federation of Organizations of the Blind towards the use of paints containing lead. The proposed legislation regarded the labeling of lead-containing paints with specific warnings. Taylor also requested information on the "probable future of white lead paint for finishing coats." (KE 02873-02874)

- On June 15, 1955, Bowditch received a letter from Leonard Greenburg, Commissioner of the N.Y.C. Department of Air Pollution Control. Greenburg stated,

I am firmly of the belief that lead-containing paints should not be used for those articles of furniture with which infants and young children may come in contact, for there are many instances in which infants have chewed on painted articles and have become poisoned by the ingestion of lead. Over and above this, I see absolutely no reason and have no instance at hand to indicate that paints containing more than 5% of lead should be banned in any country. (KE 02886)

- A series of correspondence issued from the lobbying efforts of the Australian Federation of the Blind. Those involved in disclaiming the connection between lead poisoning and blindness were Manfred Bowditch, John Foulger - Director of Medical Research at E.I. duPont & deNemours, Dr. May Mayers, Gerard Cranch - Medical

- = Documents which are connected in a series of correspondence.

Consultant at Union Carbide and Carbon Corporation, and Dr. Rutherford Johnstone. (KE 02888-02891)

Manfred Bowditch sent Kehoe a letter on July 19, 1956 enclosing information with regard to "The Luscious Luce Lunacy" - a case about a woman who fell ill in Italy and searched for the cause of her illness in either flaking paint or in arsenic-laden agricultural sprays. (KE 02915-02916)

- Bowditch sent Kehoe another letter (08/08/56) also enclosing articles in which the source of Luce's illness remained unknown, but presenting the white-painted roses on the ceiling as a possibility. The question of "exterior white paint" arose (KE 02919), and it was stated that "If someone used this by mistake to paint furniture, a child might chew on the paint and be poisoned." (KE 02917-02920).

On July 3, 1956 Kehoe received a letter from Jesse Lieberman, Chief Industrial Sanitation Section at The Philadelphia Department of Public Health re: "Case of a child who died of lead poisoning." Lieberman had collected samples from the home of the child and discovered that lead was contained in the toys as well as 0.2% in the dirt. Lieberman questioned whether a nearby aluminum foundry could be culpable. (KE 00949)

- Kehoe responded to Lieberman on July 28, 1956 stating that poisoning caused by the toys was not unusual, whereas an aluminum foundry would have no need to be "handling lead-containing alloys". He conceded that if it were handling lead-containing

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alloys, the foundry could have contributed to the child's lead poisoning by "depositing lead-particles on the floor, window-sills, etc. of the home." (KE 00948) ✓

On May 13, 1957, M. Bowditch sent Kehoe a letter stating,

We have undertaken to be responsible for the preparation of a Monograph on Lead to be published by the American Chemical Society, a volume which may run to something like 1,000 pages. a section on the hazards to health inherent in the handling and use of lead and lead products will have a place in this opus.... (KE 01384)

On June 2, 1958, Kehoe received a letter from M. Bowditch thanking Kehoe for his report, "The Occurrence and Significance of Lead in the Paint Used on Toys." He also enclosed a copy of the A.S.A. Z66 Sectional Committee Standard Z66.1-1955 (KE 03713-03718) as well as a list of the members of the Z66 Committee (KE 03712).

- The Z66.1-1955 Standard was established to "Minimize Hazards to Children from Residual Surface Coating Materials." A separate sub-committee was established to "deal with the identification or labeling of paint products to indicate that they are safe to use in painting objects or surfaces which might be chewed by children." The standard itself "[dealt] with the toxicity hazards which may be encountered through chewing off and swallowing the dried coatings of articles accessible to children, including interior woodwork." (KE 03713-03718)

On June 6, 1958, Kehoe received a letter from George Wheatley, Chairman of the Committee on Hazards to Children thanking Kehoe for his study, "The Occurrence and Significance of Lead in the Paint

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Used On Toys." Wheatley also addressed the issue of the National Retail Drygoods Association to

clarify some misconceptions which some of them have about "lead free" paints. It appears that some of them are seeking this type of paint rather than paint which conforms to the Z66.1 standard.... The toy manufacturers appear to be quite understanding about this problem but we must do more education with the Retail Drygoods people. (KE 00519)

On March 9, 1959, S.L. Karpelan, general manager of the Pigment Color Division at Imperial Color Chemical & Paper Corporation sent R.L. Ziegfeld, Secretary, LIA a letter regarding the reduced use of lead chromate pigments due to labeling regulations." He continued by saying that the LIA "could do the lead producers a service by protecting the colored lead pigment industry...." (KE 03783)

- On April 1, 1959, S.L. Karpelan sent R.L. Ziegfeld another letter regarding the varying degrees of toxicity of different forms of lead. Karpelan boasts, "We are one of the basic producers of chrome chemical, and probably the largest consumer in the world." He continued:

We know that certain chrome producing plants have had a bad experience, and that was the reason for the investigation, but the results have indicated that there is some intermediate form in the producing of a chrome chemical not in the use of it, which seems to be at fault, but for some reason or other our process for producing chrome chemicals does not seem to present the hazard, even at this point, that some other producers seem to have.

It is a far cry from the concentrated exposure that our workmen get, and our customers' workmen get, to the exposure of the user who applies a paint film to some surface. (KE 01783-01784)

On June 8, 1959, M. Bowditch sent Kehoe a copy of a 6/3/59

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letter from Mr. Hunter to Dr. Foulger at E.I. duPont & deNemours. Hunter's letter was written in response to an earlier letter (5/28/59) discussing the issue of the Z66 Standard and the fear that the standard might be expanded to include all interior paints. Hunter presented the prospect of a study of interior paints

to further knowledge on this subject so that such losses would not be forced upon the industry unless they were justified.

We know that such a program of study would be expensive but we are hopeful that in some way the Lead Industries Association, the National Association of Paint Manufacturers, and the Federation of Paint and Varnish Productions Club can get together at last in the interest of defining the problem and finding out whether or not it is practical to attempt to make a study of it at this time. (KE 03781-03782)

1960s

On May 18, 1960 Dr. R.E. Wehr, Acting Health Commissioner, City of Cincinnati Board of Health sent a letter to Kehoe about "lead free" paints which, "when pigments were added to it, would bring about some lead in the paint". (KE 00552)

• On June 2, 1960, Kehoe replied to Wehr's letter. Kehoe stated that "although the paint manufacturers and distributors have had a long time to learn something about these problems they have not undertaken to do so." (KE 00550-00551)

The Harben Lectures, 1960: The Metabolism of Lead in Man in Health and Disease were presented by Kehoe and represented the clearest and most complete compilation of Kehoe's research on lead to that date. Lecture III, "Present Hygienic Problems Relating to

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the Absorption of Lead" related most closely to the specific problems of white lead and lead-containing paints/pigments. It covered the "Diagnosis of Lead Intoxication" (KE 04273-04279), "Lead Poisoning Among Children" (KE 04279-04283), and "Occupational Hygiene in the Lead Using Industries" (KE 04283-04297). The issues raised there are issues of sources of lead poisoning, diagnosis, treatment, and preventive measures.

On May 25, 1960, Kehoe wrote a letter to Henry Whitson at the National Lead Company "in relation to your special paints." This letter implied that Kehoe and Whitson had organized to have Kehoe complete a research project on the toxicity of a particular pigment. Kehoe stated,

If my proposal is carried out, we shall have some valid evidence - not much and actually not enough, but some - of the extent of the exposure to, and the absorption of, lead associated with the work of your men in the manufacture of the pigment in which we are interested. (KE 02017-02019)

On May 27, 1960, J. Cholak, an associate of Kehoe's at Kettering, received a letter from J.S. Long at the Paint Research Institute regarding lead toxicology and cases of lead poisoning in children, particularly from slum areas in New-York and Baltimore. (KE 00946-00947)

• On May 31, 1960, Kehoe responded to the May 27th from J.S. Long letter in lieu of Cholak. Kehoe stated that the immediate problem with respect to lead poisoning in children was a "means of prevention." Kehoe stated that Kettering had "been in fairly close touch with the National Organization of the Paint and

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Varnish Manufacturers in relation to the present problem of lead poisoning in childhood...." (KE 00944-00945)

On March 2, 1961, Kehoe received a letter ^{from} J.S. Long at the Paint Research Institute regarding a "good standard method for lead in paints." (KE 00943)

On June 15, 1962, Kehoe sent a letter to Robert Ziegfeld regarding the use of lead-containing paints for automobile bodies. Having reviewed the proposed manner in which the paint would be applied, Kehoe found no real hazards inherent in that particular use of lead-containing paints. (KE 00272-00273) (KE 04556-04557)

In February of 1964, the Archives of Environmental Health published an "Introduction to a Symposium on Lead" put forth by the A.M.A. With respect to the Paint Industry and the Colors Industry, this Symposium provided a basic summary of uses of lead in both these industries. (KE 02293-02298)

On April 13, 1964, Kehoe provided an "Outside Opinion" to the Human Ecology Study Section on the "Relation Between Air Pollution and Lead Poisoning". With respect to childhood lead poisoning, Kehoe stated: "These matters require investigation of the home environment of children, and intensive study of potential, incipient and severe cases." (KE 00984-00986)

On January 11, 1965, Kehoe wrote Dr. Hugo Dunlap Smith, Associate Professor of Pediatrics at the Children's Hospital Research Foundation in Cincinnati regarding "analytical data gathered from about 24 fatal cases of lead poisoning among

• = Documents which are connected in a series of correspondence.

children." (KE 00101-00102)

- On January 21, 1965, Dr. Smith wrote Kehoe thanking him for his letter regarding "total body burden of lead in cases of lead poisoning among children."

From December 13th through December 15th, 1965, the Public Health Service sponsored a "Symposium on Environmental Lead Contamination" in which Kehoe presented a paper entitled, "Under What Circumstances is Ingestion of Lead Dangerous?" In the introduction to this paper, Kehoe stated,

Through innocence, ignorance, or irresponsibility, the non-occupational environment of an individual, a family, or some other group may be rendered dangerous by personal behavior, or through the utilization of materials or equipment commonly known to be dangerous.

The example which Kehoe provided of this was an infant who had ingested continual quantities of lead and thus become lead intoxicated. (KE 02391-02392)

On April 24, 1967, Kehoe received a letter from Dr. Albert Kolar at Falkirk Hospital in Central Valley, NY requesting information on cases of two housepainters with possible cases of lead poisoning. (KE 00818)

- Kehoe sent a letter back to Dr. Kolar on May 2, 1967 expressing his skepticism that two housepainters would have lead poisoning due to the unlikeliness of hazardous exposure. Kehoe stated that unless there was extensive exposure to "divided particles" which might have been created during the removal of paint, ie., by scraping, hazards to housepainters were minimal. (KE

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00817)

On October 26, 1967, Hugo Dunlap Smith, Professor of Pediatrics at The Children's Hospital Research Foundation in Cincinnati sent Kehoe a document to be critiqued by Kehoe. (KE 00090)

- On November 1, 1967, Kehoe returned the document to Dr. Smith with a letter (KE 00089) and comments and explanations (KE 00095-00096). The document itself (KE 00091-00094) related to lead intoxication in children resulting

from weeks, months, or years of exposure of the child with pica to readily accessible sources of lead in his immediate environment, most frequently to household surfaces painted with lead-containing paints which may be chewed or sucked, or may yield flakes of crazing paint to exploring fingers and mouths. (KE 00091)

On October 28, 1968, Kehoe sent a letter to Dr. Smith with corrections on "Dr. Chisholm's draft" which covered issues regarding the occurrence and prevention of lead poisoning in children. (KE 00097-00099)

On May 26, 1969, Edward Gross of Science Services, Inc. sent Kehoe a "proposed article on lead pollution." (KE 00426)

- Kehoe sent back a series of comments on the article in which he stated:

The present limited use of lead containing paints in the interior of homes and other buildings does little to solve the problem of children in the poorer areas of our cities where the results of interior painting years ago persist and will continue to do so for a long time to come,... (KE 00430)

On July 23, 1969, Kehoe received a letter from Wilbur Thomas at the Center for the Biology of Natural Systems in St. Louis

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thanking Kehoe for sending him a copy of The Harben Lectures, 1960. Dr. Thomas's interest revolved around "the detection, treatment, and prevention of lead poisoning in ghetto areas." Dr. Thomas also asked for Kehoe's opinion on the specific case of a four year old female with a history of pica who had been admitted to Michael Reese's Mandel Clinic. (KE 00492-00493)

- Kehoe wrote Dr. Thomas back on August 22, 1969 elaborating on a question which Dr. Thomas had raised regarding the use of hair for diagnostic purposes. (KE 00490-00491)

1970s

On February 6, 1972, Kehoe received a letter from Norma I. Halley, a graduate student at the Boston University School of Nursing, regarding an article in a February, 1971 issue of Scientific American, written by J.J. Chisholm. (Dr. Chisholm had mentioned Kehoe's lead studies, causing Halley to divert her inquiries about lead absorption to him.)

- Dr. Kehoe sent Halley a letter on February 29, 1972 elaborating on the manner in which ingestion of lead could become hazardous. In terms of ingestion of lead, Kehoe referred to lead "removed from the painted surfaces in the vicinity of the child." (KE 00955-00957)

On December 13, 1973, Kehoe received a letter from Dr. Keith Fairley from Melbourne discussing a decision to reduce lead levels in petrol. The reason presented to the State Premiers and

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Commonwealth Premiers came from the elevated lead levels in the blood of 105 Tasmanian children who had ingested paint used in old houses. ("the Queensland story"). (KE 00641-00642)

In 1979, the LIA put out a pamphlet entitled LEAD discussing modern uses for lead, including "lead paint gives facelift to 70 year old bridge." (KE 04045-04051)

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