August 20, 1942

[redacted] Goodrich Co.
[redacted] Main Street
[redacted] Ohio

Special examination made at the request of Dr. D. B. Lowe, Medical Director, The B. F. Goodrich Co., Akron, Ohio.

[redacted] - age 39, male, white, married, employed in manufacturing, grinding and mixing plant (Mill 3), B. F. Goodrich Co.

Presenting Complaint

Muscle pains, pains in feet and legs, tires easily, anemic. Previously felt well until about February 1, 1942. At this time he was transferred from his usual work of tire stacking to water washing synthetic rubber. After doing this work for about two weeks, he seemed drowsy and sleepy although he slept soundly at night and about February 21st noticed some unsteadiness on feet, a wobbly nervous sensation, noted especially on getting up after sitting or lying down. Did not seem to have control of muscles of legs although control was better and almost normal after walking for a few minutes. There were no muscle or joint pains at this time. He felt fairly well otherwise although the appetite was somewhat diminished and a disagreeable taste was noted. There was approximately ten pounds weight loss. A physician, Dr. G. W. Hamilton, of Akron was consulted on March 13th, the chief complaint being loss of appetite, loss of weight, unsteady gait. Dr. Hamilton consulted Dr. Lowe, Medical Director of the B. F. Goodrich Co., about a possible work hazard and was advised that there was a benzol hazard and that if Mr. [redacted] had not been feeling well, he should be hospitalized for observation and determination of the cause of illness. Accordingly he entered the City Hospital, Akron, March 15th for observation and remained five days until March 20th. Specialists' examinations included eye, ear, nose and throat, neurologic, and laboratory tests. According to Mr [redacted] statement, all tests were reported as negative. After having been away from work for about six weeks until April 30th, he returned and on advice of the Medical Department was transferred from washing to packing dry rubber. He was feeling much better but still not as strong as usual. The appetite was better and he had gained four pounds. The taste was more normal. Some backache was noted presumed to have resulted from the spinal tap. He continued at this job of packing rubber for two or three weeks until about May 15th or 20th. Then he was transferred to the Manufacturing Department compounding lead silicate. He worked in this department until August 5th during which time he gradually lost pep, began to notice pains in the feet which he attributed to arch trouble

And about July 15th the pains continued and centered into the legs, knees, lower part of stomach and small of the back. There was also slight pain in the wrist. During this period there was no limitation in motion and no notable muscle weakness. The discomfort was described as generalized sharp constant pain and deep muscle soreness in the feet and legs. There seemed also to be some muscular pain of rather vague character in the lower part of the abdomen and the back. During this period these pains were more or less constant and at times prevented sleep. They became so disturbing that on August 2nd a physician, Dr. Dickson of Akron, was called because of their increasing severity. They were not greatly relieved by medication and continued until August 8th. At this time Mr. Morgan was advised by Dr. Dickson to go to the Cleveland Clinic for general examination. Strangely enough the sharp pains disappeared August 8th though the dull, deep-seated, muscular pain persisted. Mr. [redacted] went to the Cleveland Clinic August 8th as an out-patient. He returned again on August 10th at which time his examination was complete and the diagnosis "lead poisoning" was made.

A review of Mr. [redacted] occupational history revealed that he had been employed by the B. F. Goodrich Co. in 1929 for six to eight months, from 1933 until 1938, and from 1939 until the present time, August 1942. From 1933 until 1936 he worked in the reclaimed rubber department, a refining process having no special work hazards. From 1936 until 1938 and 1939 and also in 1942 he worked in the tire division curing tires, there being no obvious hazard in this work. In February 1942 Mr. Morgan was transferred to the synthetic rubber department, Mill 3, employed in water washing synthetic rubber. This work was carried out in a rather poorly ventilated room. In the manufacture of synthetic rubber benzene was used and benzol fumes came from the wet rubber during the washing process. During the early phases of this operation, there was no control established to eliminate these fumes. They were noted as strong, unpleasant, irritating odors and at times caused congestion of the eyes. This work was carried out six hours daily, seven days a week for six weeks with one day off in this entire work period. About March 14th Mr. [redacted] complained of sleepiness and staggering gait as noted in the presenting illness. He consulted his physician as noted above. He was away from work from March 14th until April 23rd. Upon his return to work in May 1942 he was transferred to the lead silicate plant where his work consisted of weighing 30 lb. of lead silicate taken from a drum into a screen box on scales. The drum box and scales were inside of a ventilated booth in which any dust is drawn to the back of the hood away from the operator. He wore coveralls and leather gloves, the coveralls being changed once a week and took a daily shower after work. For more complete details of this lead silicate operation consult the attached report from the Office of the Safety Engineer of the B. F. Goodrich Co. After one month of this work lead silicate manufacture was discontinued and was received from another plant. It was ground in a mill with an 027 screen to fine powder. Approximately 1000 lb. of this material was ground daily. Further operations consisted in filling six or seven

200-lb. fiber paper drums with the compound and also in mixing about 630 lb. of the ground powder with oil. This work was carried out during the month of July. It was done in a third floor room approximately 40 x 20 x 25 feet with windows on all sides usually open on three sides. The grinding mill and scales were placed under a hood with forced ventilation. Regulations required the wearing of a dust respirator mask at all times. Mr. Morgan states that he always wore the mask when weighing and grinding the lead silicate but frequently removed it when away from the hood. He also noted that fine dust settled on the floor and various objects in the room and that mask was used when the room was swept daily. He was careful to wash his hands before eating and did not eat in the shop.

General Review and Systems

Health very good prior to February 1942. Usual weight 180, best weight 184 (Feb. 5, 1942), least weight 168 (1936-domestic worry), present weight about 170 to 172 (August 15, 1942).

Head: Headache every month or so with sour stomach, some dizziness with flash of darkness on changing position quickly.

Eyes: Wears glasses for reading or driving, "far sighted". Measles as baby when less than a year old; settled in eyes producing muscle weakness of left eye.

Ears: Hearing slightly impaired, no discharge, no history of earache.

Nose: Broken in 1922 - no disturbance in sense of smell. Does not take cold easily, "slight catarrhal condition", frequent nose bleed as boy (17-19 yr.)

C.R. No chest pain, no chronic cough, no hemoptysis, no sputum, dyspnea, ankle edema, palpitation or asthma.

G.I. Appetite good, no foods disagree. Upset stomach at times from eating too much rich food, nausea, vomting, headache; attacks usually relieved by vomiting and improvement follows after two or three hours. Bowels sluggish, takes agarol and occasional Ex-lax tablet. Usually takes a laxative about once a week. No cramping or colicky pain. Acute indigestion for two or three hours in 1918. No jaundice. Nothing unusual about the stool. Drinks 4-6 glasses water daily. Seldom takes a soft drink. Has an occasional glass of beer. Seldom drinks whiskey.

G.U. Urinates three or four times daily 1/2 to 1 pt. Nocturia last week or so, gets up about four o'clock, voids about a pint. Attack of dysuria every two or three months thought to have been caused by drinking alcohol, lasted a day or so and gradually disappeared. No noted blood, pus or gravel. No history of venereal disease.

Back, extremities and joints: Dull pains in wrists and muscles of legs and feet and back as noted in P.I. No previous difficulty.

Habits

Works six hours daily, seven days a week. Averages 8 hours sleep. Slept well until present illness. Has not been sleeping as well for past two weeks because of irregular hours, infrequent dreams. Nightmare about lead poisoning Sunday night August 16th. Smokes one pack of cigarettes a week. Occasional pipe and cigar during winter. Seldom drinks, usually has bad hangover.

Marital History

Married twice 1935-36 and 1941. No children or miscarriages. Present wife in good health.

Personal History

Born August 8, 1903 Calhoun County, West Virginia. Lived in West Virginia until 1929. In Ohio since. Completed high school 1937. Lived on a farm until 18 years of age. Roustabout work in oil fields during summers and after school hours. Post office clerk during the winter. Columbia Chemical Company in the boiler room in 1929 for three months. With B. F. Goodrich for eight months in 1929 and since as noted under occupational history. Odd jobs in the intervals.

Physical Examination

General - A well developed, fairly well nourished white male 39 years of age, 70-1/2 inches tall, weighing 168 lb. (stripped). Well oriented, alert and cooperative.

Temperature 98.8, pulse 88, respiration 28.

Clean shaven, dark beard, slight facial pallor, slight infraorbital shadow.

Skin: Of the body and hands essentially normal. Good color, elastic. Perspires readily from axillae. Few scattered inflamed hair follicles over the back. Interdigital fungous infection both little toes. Slight scaliness over the dorsum of the left foot. Generous black hairy growth over body, normal masculine distribution. Slight clubbing of fingers.

Head: Scalp clean. Normal growth fine black hair.

Eyes: Pupils equal and regular. React normally to light and accommodation. Slight nystagmus left eye with close vision and upon looking upward, quick phase, internal; internal convergence left eye. Ocular tension

approximately normal. Left disc not seen well because of inability to control eye movement. Right fundus rather pale, no hemorrhage or exudate. Veins moderately full. Arteries very fine. Physiologic cupping of discs, pale yellowish surface with fairly well defined clear margins.

Ears: Drums appear normal and slightly retracted. Hearing slightly diminished right ear.

Nose: Slight deviation of the septum to the left. No marked obstruction-right inferior turbinate; oedematous and slightly congested. Nasal membranes pale and pink covered with some serous discharge and few crusts.

Mouth: 13 upper, 12 lower teeth. 1 and 3 right lower, 2 right upper, 1 and 3 left lower, and 3 left upper molars missing. Gold cap of right upper central incisor. Silver amalgam and gold fillings. Poor dental hygiene. Much sordes. Gums firm and pale. Purplish line noted along margin of right lower lateral incisor on the buccal surface, all about the remaining lower molar on right and also along the margin of the upper central incisor on the buccal surface. There is some diffused purplish discoloration of the gum about the capped tooth. Tonsils small and imbedded. Food particles in the upper pole of the right tonsil. No expressable exudate. Pharynx not remarkable. Gag reflex active. Tongue not coated - protrudes in mid-line without tremor or fibrillary twitching.

Neck: Thyroid not enlarged. Trachea in mid-line. No abnormal pulsations or fulness of the veins.

Chest: 38-1/2 inches, 40-1/2 inches expanded, symmetrical. Fremitus normal. Respiratory movements free and equal. Pressure note equal and resonant throughout. KI and diaphragmatic excursion within normal limits. Breath sounds vesicular. No rales.

Heart: No abnormal pulsation or thrill. PMI in fifth interspace. RCD 4 x 11. RSD 5. Heart sounds clear, regular. No murmurs. Rate 84, after 50 hops 112, 2 minutes after 100. Blood pressure 118/76 lying down left arm, 108/70 lying down right arm. Radial pulses equal, normal volume and tension.

Abdomen: Small panniculus adiposis, moderately muscular, symmetrical, relaxed. No organs or masses palpable. Very slight colonic tenderness, more marked on the left side. External inguinal rings intact.

Genitalia: Normal externally.

Rectal: Small external hemorrhoids. Tight sphincter. Prostate gland small, symmetrical, not tender.

Lymphatiques: Superficial groups not unduly enlarged.

Extremities: Normal form and function. Grip 115 right, 90 left.

Neurologic: Cranial nerves. 1-not tested; 2-see notation under eye, gross tests visual fields normal. Vision not tested. 3, 4, and 6 - Reaction and nystagmus as noted. Paresis left external rectus (history of measles during infancy with eye sequellae). 5 - Corneal reflex equal and active, no sensory or motor disturbance. 7 - no facial weakness. 8 - Hearing slightly diminished right ear (not tested with tuning fork). 9 and 10 - Palate in mid-line. No dysarthria. 11 and 12 - normal.

Motor System: Upper extremities - posture well maintained, muscle power good, coordination normal, muscular movements normal, muscle tone good, no obvious atrophy or fibrillation.
Lower extremities - power good, coordination normal, muscle tone good.

Reflexes: Biceps, triceps, wrist jerk and knee jerk active and equal. Normal plantar flexion right and left. Abdominals equal and hyperactive. Cremasterics equal and hyperactive.

Sensations: Light touch and pain normal. Vibration and temperature not tested. Stereognosis normal. Gait normal. Able to stand on either foot singly.

LABORATORY DATA

Urinalysis

Clear amber, specific gravity 1.015, alkaline to methyl red, pH 7.0. Sugar, acetone, albumin and blood negative. Microscopic - few white blood and epithelial cells, no casts.

Blood Examination

8-13 Specific gravity whole blood 1.0522, specific gravity plasma 1.0251, total plasma protein 6.19 grams per 100 cc. Estimated red blood count 4, 400,000, estimated hemoglobin 84%, estimated packed cell volume 44, pipette count done on oxylated blood 4,100,00, hemoglobin Dare 82% (16 grams per 100 cc regarded as normal), hemoglobin Leitz oxyhemoglobin method 12.1 grams, ear blood count (pipette) red blood count 4, 590,000, hemoglobin Dare 82%, white blood count 3,750, differential - Poly. 60, band. 5.5, lymph. 27.5, mono. 4.5, eosin. 1.5, baso. 1.0, stippled red cells 50 per 50 fields, sedimentation time (Wintrobe's method) 15,

icterus index approximately normal, hematocrit packed cell volume 40.0

8-19 Specific gravity whole blood 1.0520, estimated red blood cell count 4,400,000, hemoglobin estimated 84%, red blood count pipette oxylated blood 4,250,000, hemoglobin Dare 81%, stippled red cells 38 per 50 field, average red cell count from above estimations 4.3 million, average hemoglobin 82%. For the following red cell determinations the following values were used - hemoglobin 12.1 grams, red blood count 4.5 million, packed cell volume 40 cc. per 100 cc., MCV 88 cu.m. (normal 82-92), MCH 26 micro micrograms (normal 27-31), MCHC 30% (30% normal).

Blood Wassermann and Kahn tests negative.

8-20 Hemoglobin 78%, WBC 6,350 (10:45 A.M.), WBC 6,300 (2:00 P.M.), RBC 4,310,000, differential - poly. 55, band. 15.5, lymph. 20.5, mono. 6.5, eosin. 1, baso. 1.5; reticulocytes 156, stipled red cells 43. Icterus index approximately 8, bilirubin 2.5 milligrams per 100 cc, red cell fragility normal, beginning hemolysis 0.44 per cent, complete 0.30 per cent. Reticulocytes 156 (per 50 field).

Blood chemistry - Sugar 94, urea nitrogen 14 milligrams per cent.

EKG Examination

Reveals normal sinus rhythm, rate 84, PR 0.2, QRS 0.06, upright complexes in all leads except 3. L3 shows low voltage QRS, splintered, depressed S3. These findings are interpreted as normal.

Quantitative Lead Analyses

8-18-42 Spot sample urine 0.17 milligrams per liter. Blood 0.075 milligrams per 100 grams. Large urine sample, 0.19 milligrams per liter. Feces 0.12 milligrams per gram of ash.

Summary of Significant Findings

History of benzol exposure and intoxication in February 1942 with apparent recovery and return to work in good physical condition in May 1942. Employed in grinding lead silicate during July and until August 2, 1942 with significant lead dust exposure. Chief complaints - August 2, loss of pep; muscle aches and pains in the feet and legs, lower abdomen and back.

Significant Physical Findings

Nystagmus, paresis 6th nerve left eye (measles sequellae), blue line gums, moderate cardiac hypertrophy with normal EKG tracing, mild myocardial weakness.

Laboratory examinations reveal a mild normocytic anemia and lead findings in the urine and blood which may be interpreted as indicating probable significant exposure.

Diagnostic Impression

Probable moderate lead absorption with relatively mild intoxication with the possibility of residual benzol effects as contributing to the clinical picture either directly or indirectly by increasing susceptibility to lead intoxication.

K. V. Aitzmiller, M.D.