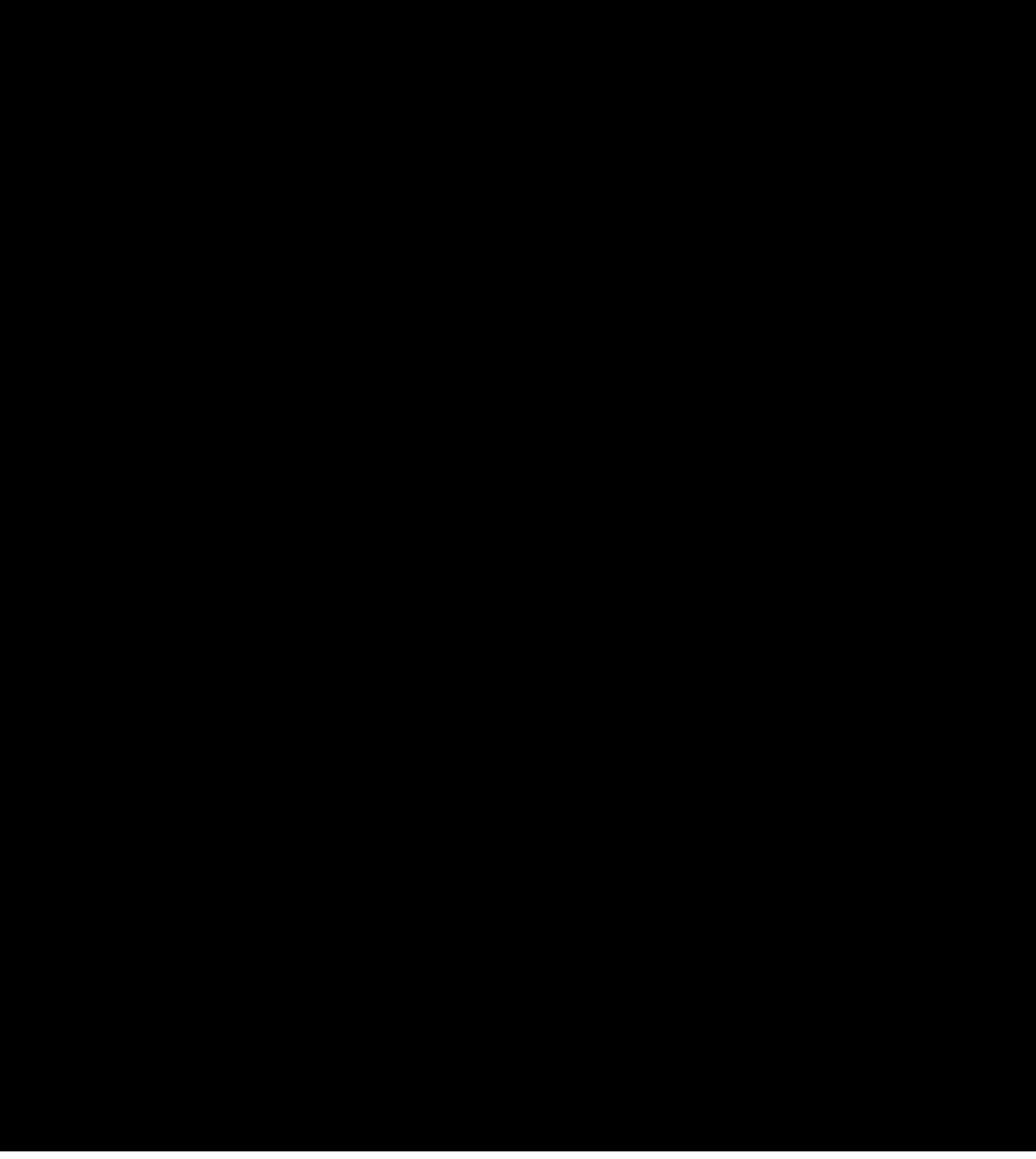




Nourse's Lead Plants

Advice from Cooper and Brice indicates that T.E.L. plants are operating at the following locations:

1. Kellyville, Oklahoma - near Tulsa - owned by Ira C. Nourse - yields 1/2 gal. per run.
2. Abilene, Texas
3. McComb, Illinois - owned by a Mr. Long
4. Dallas, Texas - hearsay
5. Western Pennsylvania - hearsay
6. Denver, Colorado - Stites Oil Company - 64th and Galapagos - hearsay

History of Plant

Feb. 16, 1941 Some of the following is pure conjecture, part is pieced out from information obtained in medical histories, remainder was gathered in discussion with various individuals concerned with present plant. In order to shorten the account as much as possible the purely hypothetical structure is given as we deduced it.

Characters

Ira C. Nourse, devoted to wine, women and song, but unable to carry a tune, the inventor of "Sipo" a product that improves gasoline but which appears to depend upon lead tetraethyl for its effect. Last reported in Kellyville, Oklahoma, operating a plant like the present one.

Eugene Nourse, son and stooge of Ira.

E. M. Cooper, the Sir Basil Zaharoff of the organization. He did not appear directly in the present picture but is promoter of and possible investor in Nourse's scheme and is 1/6 owner of present plant. He has attempted to sell idea to others in Colorado and succeeded in selling the idea of a lead plant to:

W. B. (Bonner) Brice, age 34, half owner of present plant (averts he is full owner) which he constructed with the aid of Nourse, Sr. present some time in January and:

A. L. Cooper, age 24, graduate of Northwestern University and son of E. M. Cooper. A technical man, he received his training in a two weeks' course with Ira C. Nourse at the latter's plant in Kellyville. He may now be considered the construction and plant engineer for Nourse's projects. His function is to follow in his

KE 0021248

N 24546.01

father's wake or wakes, if one prefers, and design and construct plants while instructing the purchaser in operating methods. His work does not agree with him for he lost 40 pounds in a two-week period while installing the present plant and was greatly annoyed by insomnia and hallucinosis at that time.

D.H. Elder, age 60, 1/6 owner of present plant, and apparently a good friend of Cooper, Sr.

W. M. Zene, age 61, 1/6 owner of the present plant. Works in the plant and probably makes deliveries.

Bill Griffith, age 48, a rough and ready, likeable machinist and millwright, probably closely connected with E. M. Cooper as he did all of the mechanical work on the present plant and is now constructing autoclave equipment for two more in his own shop.

<u>Tony Sporich</u> , age 28	)	
<u>Lawrence Loehr</u> , age 23	)	Plant employees

In 1939 or early 1940, E. M. Cooper became interested in Nourse's project and probably bought into it. He sent his son, A. L. Cooper, to study the methods of manufacture and began his promotional work. The first success locally was with a plant built at Adams City (north of Denver) which operated only for about 2 months and was then abandoned in 1940. The reasons for abandoning this plant (if indeed it was abandoned) are not known. It may have been purely an experimental plant or co-investors may have folded up or withdrawn. Late in 1940, Brice was approached and sold the idea of a plant. This must not have been a push-over since Brice went in for only 1/2 the cost of the plant. (It may be that Cooper's 1/6 represented royalty.) Construction was begun in December, 1940. The remainder of the history of the plant is given elsewhere.

When we arrived we were visited by Brice to whom we explained the entire hygienic problem. We urged upon him the necessity of

KE 0021249

junking and burying the entire equipment to which he was agreeable. However, 18 hours later (probably after conference with Cooper) his attitude changed somewhat and he expressed the opinion that with further investment the plant could be made safe. He was soon convinced again of the impossibility of safeguarding the operation with the present equipment, but 24 hours later had effected a compromise with principle. He suggested that I take no steps to close his plant for 48 hours to give him sufficient time to sell it to others. The adroit manner in which this moral elision was made convinces one that legal advice was given.

In the past few days a procedure for closing this plant until suitable improvements were made has suggested itself. Several were considered. That which seems best at the moment is based upon the fact that state liability insurance is required by law of all plants employing more than 3, and that the plants must be satisfactory to the inspectors before coverage is granted. This places it within the power of the inspectors to close an establishment that does not have adequately safeguarded operations. Our medical friends here in Denver are closely associated with the insurance and compensation boards and arrangements are under way for a conference on this matter.

The State of Colorado operates a state compensation insurance fund covering accidents. This operates under the State Industrial Commission which is the administrative body that determines rates, employs inspectors and acts as sole arbiter in compensation cases which they adjudicate. The Commission is headed by 3 members, one each representing the state, labor and the fund. The manager of the fund is Herb Wortman.

Feb. 17, 1941 - Dr. R. J. Ness received a visit from J. C.

Loughlin, investigator for the state insurance fund. We attended the conference and discussed the plant in some detail with Loughlin who had previously inspected it. He was not in a position to make a decision, but stated that his report included the recommendation that the fund not cover plants of this type. This leaves only the private carriers available at rates 30% above state fund levels. Appointment was made with Wortman as most interested party with the idea of discussion with him and the compensation board. At the moment a compensation law for industrial disease is before the legislature and as Cummings is actively concerned with its provisions we asked him to sit in.

Feb. 18, 1941 - Meeting held at State Capitol - following present:

William I. Reilly - Member of State Industrial Commission and spokesman.

Ray Branneman - Chairman of State Industrial Commission

Arthur King - Third member of Industrial Commission

Herb Wortman - Manager of State Insurance Fund

John Sharp)

Felix Pogliano)

John Loughlin) State Fund Officials

C. S. Hallen)

C. J. Luplow)

H. C. Thompson - Director of Claims - State Insurance Fund

S. D. Kelly - Director of Factory Inspection Department of the Industrial Commission.

Herman Atensio - Department of Factory Inspection

B. V. Howe - State Sanitary Engineer, State Department of Health.

KE 0021251

Don Cummings - Department of Industrial Hygiene - University of Colorado School of Medicine.

The Commission and Fund Officials had been made aware of the general situation by previous discussions with department employees. The function of the present meeting was to present the hygienic picture in greater detail and enlarge upon the public health aspect and especially, to establish our bona fides. It was decided at this meeting that the commission was empowered to close the plant if it was found to be a significant hazard and the following committee was appointed by Reilly to inspect the plant this afternoon and report upon it.

Kelly

Loughlin

Cummings	}	observers
Machle		

Pogliano

Howe

Shilt (a chemist)

No difficulties were encountered in the meeting but detailed explanation of our position in the matter was necessary. The fact that Ethyl is a monopoly and we have been consultants for it must certainly have suggested to some that even though we were completely disinterested except for the hygienic considerations, yet the end result of our efforts would be to put out of business a competitor of the Corporation, thus indirectly working a hardship upon a small investor for the benefit of the monopoly. What will most certainly follow is a request for details of hygienic control necessary for the operation of small plants.

February 19, 1941 - Afternoon of Feb. 18, plant was inspected with committee. As luck would have it, one of the most ignorant of the employees (Sporich) was in the process of making a run (distillation step), his first, and upon questioning by the state inspectors

K E 0021252

revealed his ignorance of the hazard to which he was permitted to be exposed. General opinion expressed by the committee was that the plant should be closed at once and that Brice had criminal liability in permitting an ignorant, uninformed employee to work alone without supervision. Responsibility for decision fell upon Kelly who is to interview Brice tonight and request closing the plant pending construction of a code for plants of this type and failing to secure his cooperation closing will be made mandatory by states' attorney tomorrow.

Effective powers of commission revolve about their power of establishing a code for any industry, requiring conformity with code before permitting operation. We were asked to draw up the outline of such a code and agreed to do so within a two weeks' period and forward same to Kelly and Howe. We felt that this interval would be desirable. It may be the opinion of the states' attorney that this period is unnecessarily long and we will be put to the necessity of writing one at this time.

Feb. 20, 1941 - Met with Kelly who advised that he had discussed matter with Brice and plant was now formally closed. Inspector Atensio has been assigned to see that it stays closed for such time as is necessary to prepare the code. We were asked to outline the necessary hygienic precautions as soon as possible.

Following meeting with Kelly met with Dr. Roy Clear, asst. director of the State Board of Health and associates, and with B. V. Howe, chief engineer of the State Board of Health, and discussed the entire problem with them, more especially the potential public health hazard arising from transportation, blending, failure to control color, concentration and warning signs. It is this agency and their newly organized department of Industrial Hygiene which will

be most interested in the problems other than those arising in the manufacture itself. A copy of our proposed code for hygienic control will be sent to Howe as well as Kelly.

Willard Machle, M. D.

KE 0021254

The Plant

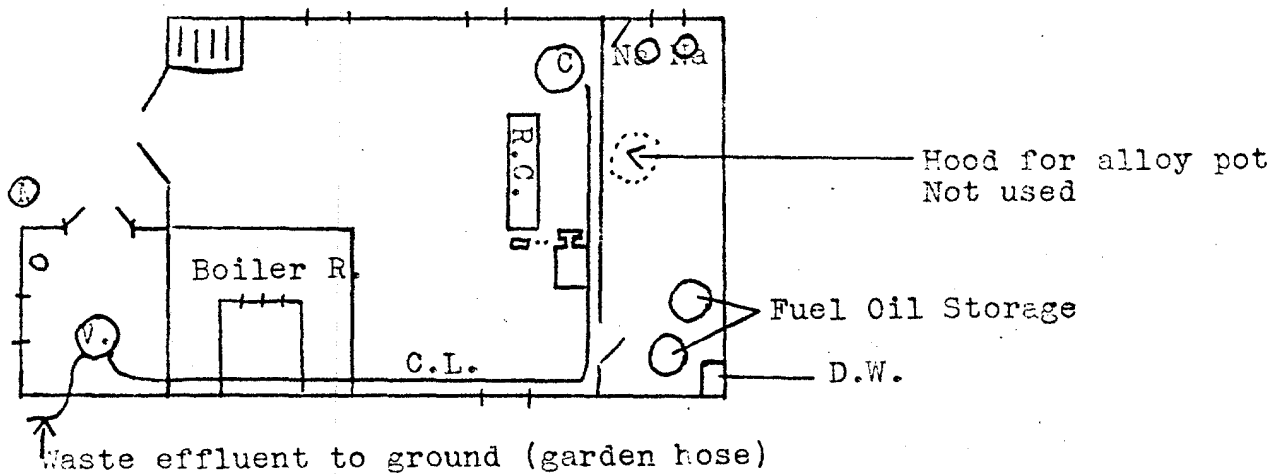
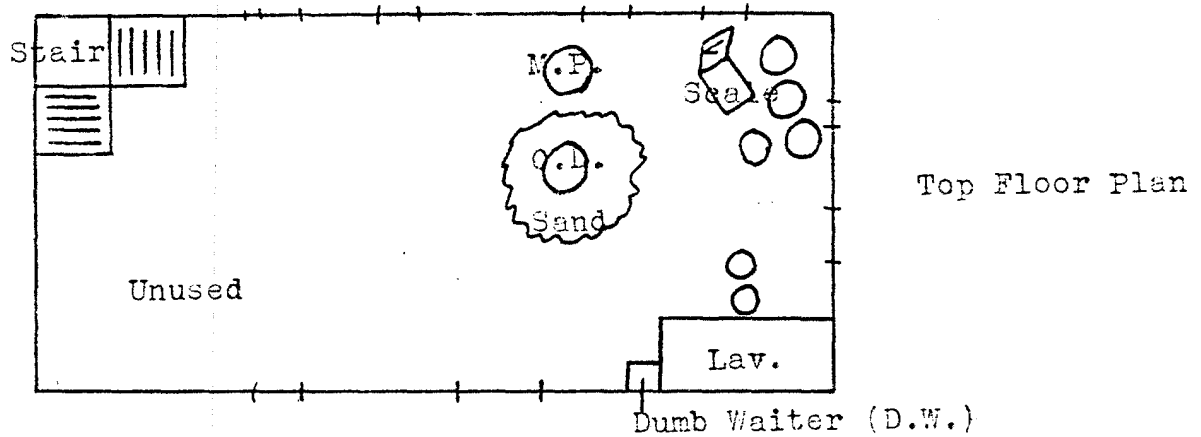
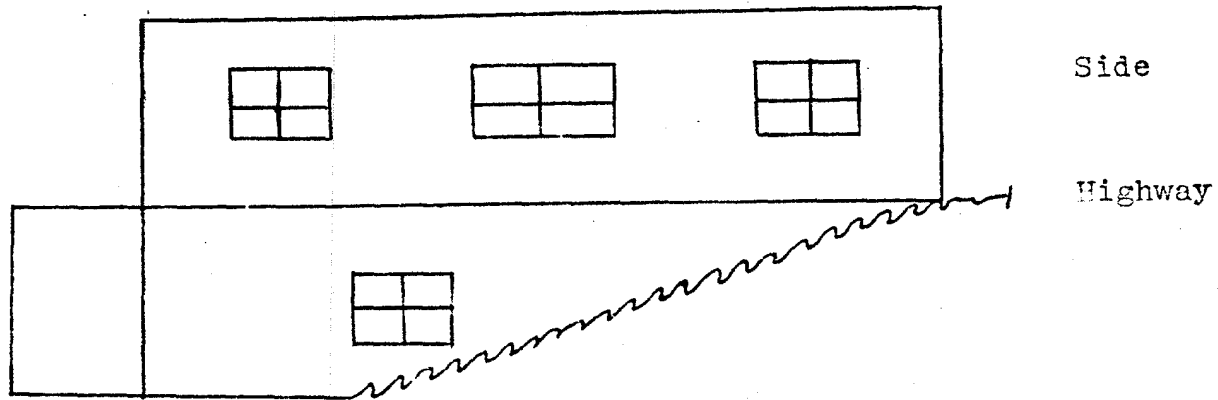
The factory was inspected on February 13, 1941. The plant is housed in a 1-1/2 story brick building, concrete floored and well illuminated. Situated on the corner of Alameda Avenue and Parker Road just outside the southern limits of Denver, is in close relation to but one dwelling. The lot at the rear is used for dumping cast-off equipment, slag and autoclave- still-residue. Ethyl chloride, sodium, and lead are stored on the first and second floors of the building and the alloy is made on the second floor. On the first floor, or ground level in the rear, is situated the reaction chamber, condenser and boiler room, the alloy being carried down a flight of wooden stairs or on the dumb-waiter, when charging. The discharge line from the condenser follows wall of the room to outside lean-to where a 10 gal. glass visible with a faucet on the bottom is used to cut yield. Wastes drain onto ground outside lean-to through garden hose. There is no sewerage connection. Filtering is done in the open air outside lean-to and open melt-pot there is used to reclaim lead from residues.

The general layout is given in the attached sketches.

Willard Machle, M. D.

KE 0021255

Plant (Continued)



Equipment drawn somewhat larger than actual. Most of plant space unused.

KE 0021256

Hygienic Conditions in the Plant

1. Hazards

The only ventilation in the plant is that which occurs naturally through the open windows and this combined with the fact that no efforts are made to keep lead from escaping into the air as fume or off the floors in handling, makes the conditions unbelievably bad. There is continuous contamination of the air by lead dusts and at least once daily there is added to this further contamination by lead and alloy fume and the vapors of T.E.L. From the point of view of what has happened the last is the worst at the moment, but the hazard from inorganic lead impresses us as being equally great if sufficient time were allowed for its full effects to be evidenced. In fact the severity of symptoms, presence of stippling and atypical behavior of Loehr suggest that the T.E.L. intoxication has been complicated by severe exposure to inorganic lead.

The single precautionary measure employed has been the use of an M.S.A. canister mask with a canister of activated charcoal. This mask has been in use since the plant has been in operation and no time record has been kept of its life. The practice has been to wear the mask only when the reaction chamber is open and then not with regularity. Since the air of the entire building would obviously be contaminated at this time, protection would be limited to one workman using the mask.

In view of the above, conditions of exposure may be estimated from the outline that follows:

I. Continuous, of significant magnitude

(a) Lead dusts from floor and equipment, all of which are

dirty as a consequence of lack of effort to keep clean.

(b) T.E.L. vapor from residues spilled on floor and left lying about in pans and buckets.

(c) T.E.L. vapor from balls, exposed equipment, open reaction chamber, and seepage from condenser line.

(d) T.E.L. vapor around visible and from water over-flow from steam distillation mainly limited to lean-to and ground outside.

(e) Lead dusts, T.E.L. vapor and decomposition products to anyone near dump in yard, arising from residues, slag, used filters, gaskets and discarded equipment that is left lying about. This place is not fenced and is accessible to children.

II. Discontinuous, severe

(a) Fume from melt pots. To workmen engaged in storing or skimming, exposure may reach levels of 2-600 mg/10 cu m. In addition to exposure of operation causes further increased exposure to all others in building.

(b) T.E.L. vapor from reaction chamber when cleaning and drying. This is the most severe of all exposures. Concentrations of 4-5 mg/L of T.E.L. vapor will be present about autoclave when opened and even higher levels will be reached when the chamber is heated to dry.

(c) Severe exposure of operator is practically a certainty when cutting yield in lean-to and when filtering and packaging fluid. Cutting is done from bottom of visible which is situated in a pit (to permit gravity flow) about 5 feet below level of single window - operator crawls into pit to draw off yield.

(d) Severe exposure to operator and those nearby occurs in tear down and repair work. In one instance all operators in plant suffered prolonged attacks of sneezing while one welding repair was going on.

KE 0021258

(e) Autoclave has no pressure disc being equipped only with a 3/4" line 6" long with elbow and trip-spring safety valve for pressure release. If this type of equipment is used long enough it is certain that it will blow up as a consequence of the uncontrollable reactions that infrequently occur.

(f) A serious fire hazard arises from the manner in which the ethyl chloride is handled. Connections are interrupted frequently and fittings are clamp-type on a garden hose line. Small leaks are probably usual in both rooms in which open gas flames are going and hose will deteriorate rapidly.

(g) Block sodium is cut with a grocer's cheese cutter - no goggles worn.

III. Sanitary Conditions

(a) Washing and toilet facilities are primitive.

(b) Clothing is not worn and protective gloves not used.

Glove usually employed is canvas with leather palm. Those examined at time of use by employee were dirty and had odor of fluid.

(c) Illumination is good.

IV. Conditions Outside Plant

(a) As pointed out above, plant is hazard from fumes, dusts and vapors both to neighborhood and by reason of its close relation to highway.

(b) The refuse dump is open and accessible.

(c) Disposal of contaminated wastes, especially condensates from steam distillation is to subsoil. Across road is dairy farm - 75 yards to dairy building, 100 feet to west is dwelling in rear of which water well is being drilled now. Natural drainage of still effluent is across adjacent farm, including out buildings. See sketch.

V. Transportation

- (a) Product is shipped in small lots in one gallon cans or less.
- (b) Principal customer has been the Albany Oil and Refining Company, Laramie, Wyoming (25 gal.) who operate a skimming plant at Laramie.

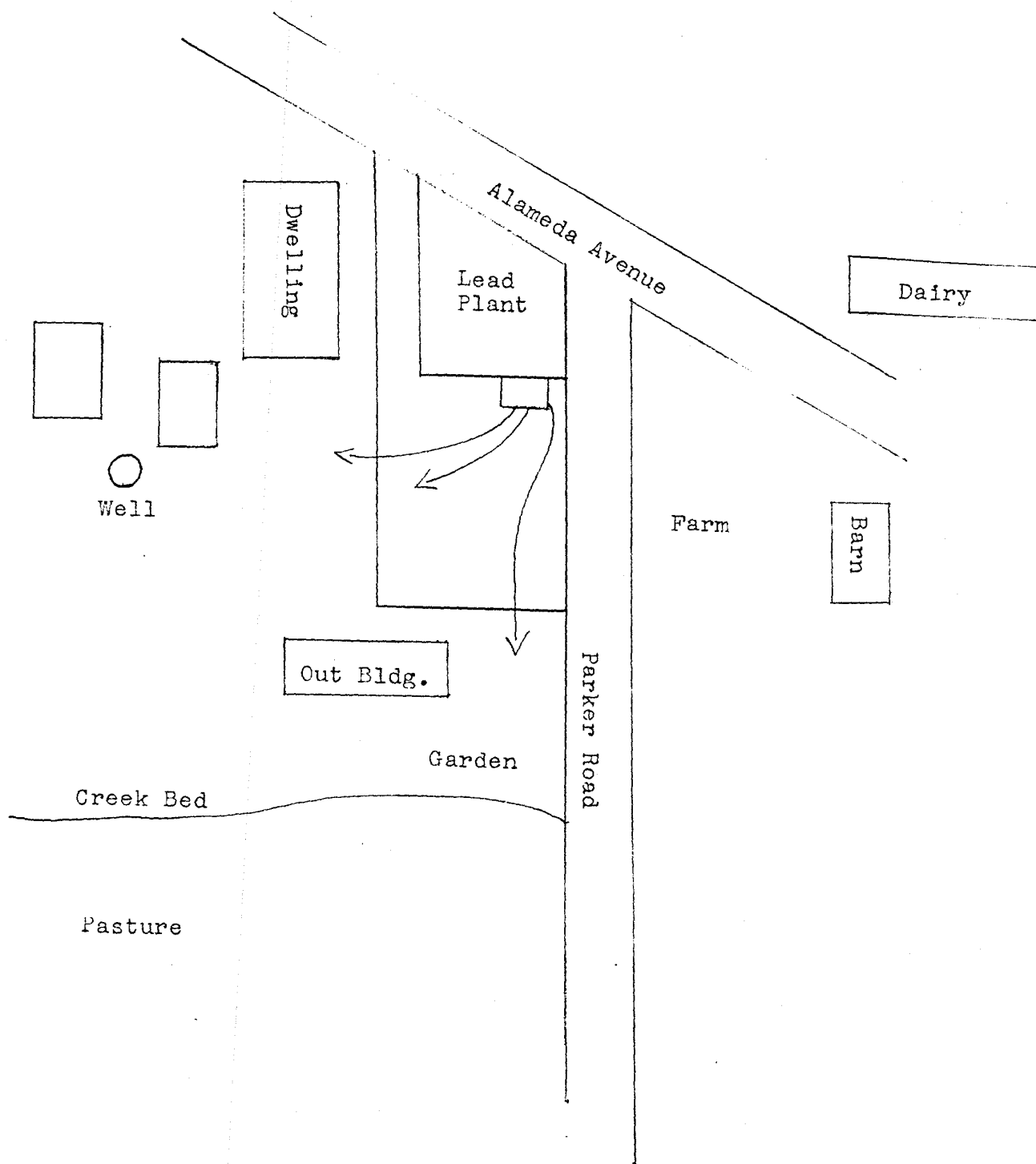
VI. Blending

- (a) No information is obtainable concerning methods or precautions employed.

Willard Machle, M. D.

KE 0021260

PLANT RELATIONS



Natural drainage follows course of arrows.

(Soil, sand and loam)

KE 0021261

Denver Cases

February 11, 1941 - 2:30 p.m.

Dr. R. G. Ness (Telephone - office Keystone 4472, home East 2194) called for advice on therapy of a case of lead encephalopathy. The patient, [REDACTED], presumably employed by the Brice Oil Company of Denver, blended Ethyl Fluid on January 27, 1941. In the 11-day period following he became ill. There were severe insomnia, restlessness, irritability, weakness and nausea, all symptoms except the last becoming more severe until February 8, when seen by Dr. Ness. Placed in hospital where he has been wandering between delirium, mania and quiet, confused states, since. Yesterday, February 10, and today has become worse, sedatives no longer needed and patient is comatose. Has taken no food in past 24 hours. K.K. that were formerly hyperactive, are now absent. Bilateral Babinski is present. Stippled cell 1:5000. There is external strabismus, temperature subnormal, and there is definite pulmonary congestion. Hb 86, Rbc 4,000,000.

Advised 1500 ml 5% glucose in saline I.V., 100 mg ascorbic acid and 100 mg nicotinic acid. At least 3000 ml fluid to be given every day.

Note - We have no record of examination of patient for work as blender nor advice of contact with Brice Oil Company, present or proposed.

4:30 p.m. - Berg called - stated no knowledge of Brice Oil Company, but that there have been two lead plants operating in Denver from time to time. One has presumably been abandoned, the other may be operating.

Willard Machle, M. D.

KE 0021262

N 24546.03

Denver Cases

February 15, 1941 - Summary of Clinical Observations

Of six men who have worked in the plant all now have or have had some degree of intoxication. Severity of symptoms varied from a few nights of insomnia [REDACTED] in a part owner of the plant with slight exposure, to one very severe case, the outcome of which is not yet predictable, [REDACTED]. In addition one employee (Tony [REDACTED] whose work was mainly outdoors and [REDACTED] and son (age 4) had a potential exposure as a consequence of going in and out of the plant. They showed no definite signs of intoxication when seen on February 14, 1941.

The separate records of each are attached. The diagnosis and prognosis given in each case is subject to interpretation, that it was to a degree based upon the history of exposure which we have reason to believe was not given correctly in all instances. It is probable that all exposures were more severe than indicated in the histories.

Willard Machle, M. D.

KE 0021263

N 24546.04