

INTERIM REPORT ON CASES OF TETRAETHYL LEAD INTOXICATION FROM
TANK CLEANING AT STOURPORT, SEPTEMBER, 1950.

MEDICAL ASPECTS.

CONFIDENTIAL.

NOTIFICATION

At 8 p.m. on Friday, 22nd September, 1950, Dr. G. Hearn, Physician at Dudley Road Hospital, Birmingham, phoned Dr. E. Davison, and informed him that he had a case of tetraethyl lead poisoning in his ward, and requested details of treatment, especially as regards the advisability of using B.A.L. (dimercaptopropanol). He had been in touch with Messrs. Boots Limited, Manufacturing Chemists, Nottingham, who manufacture this drug, and was referred by them to Dr. Davison. As a result of further phone conversations on the same evening and on Saturday, 23rd September, it was learned that the man involved was [REDACTED] employed by J. Whelan and Sons, Engineers and Contractors, 204 Pitsford Street, Birmingham 18, and that he had been employed in tank cleaning in Stourport on about the 12th of the month. He was admitted to hospital at 1.50 p.m. on the 20th having collapsed with abdominal pain. It was learned that there was another patient involved in the same incident in hospital at either Wordsley or Stourbridge, and that there were a few other cases ambulant. The Heads of the Manufacturing, Secretary's and Operations Departments were informed in that order.

It was decided that Dr. Davison and Mr. R.R. Biggs should visit Stourport, with a view to providing any help they could. Mr. R.R. Biggs will render a separate report on the incident.

ITINERARY.

26.9.50.

The following met at Stourport:-

Mr. A.W. Prowse, Branch Engineer, Regent Oil Company.
Mr. R. Malchin, his assistant.
Mr. E. Gilchrist, Assistant to the Chief Engineer,
Regent Oil Company, London.
Mr. R.R. Biggs, Operations Department, A.E.C.
Dr. E. Davison, Medical Department, A.E.C.

The A.F.B.D. was visited, and the site inspected. Messrs. J.C. Whelan, L.V. Coates, and S. Gascoigne, employees of J. Whelan and Sons were medically examined by Dr. E. Davison on the site.

MEDICAL ASPECTS.

CONFIDENTIAL.

NOTIFICATION

At 8 p.m. on Friday, 22nd September, 1950, Dr. G. Hearn, Physician at Dudley Road Hospital, Birmingham, phoned Dr. E. Davison, and informed him that he had a case of tetra-ethyl lead poisoning in his ward, and requested details of treatment, especially as regards the advisability of using B.A.L. (dimercaptopropanol). He had been in touch with Messrs. Boots Limited, Manufacturing Chemists, Nottingham, who manufacture this drug, and was referred by them to Dr. Davison. As a result of further phone conversations on the same evening and on Saturday, 23rd September, it was learned that the man involved was [REDACTED] employed by J. Whelan and Sons, Engineers and Contractors, 204 Pittsford Street, Birmingham 18, and that he had been employed in tank cleaning in Stourport on about the 12th of the month. He was admitted to hospital at 1.50 p.m. on the 20th having collapsed with abdominal pain. It was learned that there was another patient involved in the same incident in hospital at either Wordsley or Stourbridge, and that there were a few other cases ambulant. The Heads of the Manufacturing, Secretary's and Operations Departments were informed in that order.

It was decided that Dr. Davison and Mr. A.R. Biggs should visit Stourport, with a view to providing any help they could. Mr. A.R. Biggs will render a separate report on the incident.

ITINERARY.

26.9.50.

The following met at Stourport:-

Mr. A.W. Prowse, Branch Engineer, Regent Oil Company.
Mr. R. Balchin, his assistant.
Mr. T. Gilchrist, Assistant to the Chief Engineer,
Regent Oil Company, London.
Mr. A.R. Biggs, Operations Department, A.S.C.
Dr. E. Davison, Medical Department, A.S.C.

The A.F.R.D. was visited, and the site inspected. Messrs. J.C. Whelan, L.V. Coates, and S. Gascoigne, employees of J. Whelan and Sons were medically examined by Dr. E. Davison on the site.

27.9.50.

A visit was made to Messrs. J. Whelan and Son, 204 Pittsford St., Birmingham 18, the tank cleaning contractors, by Mr. R. Balchin, Mr. A.R. Biggs and Dr. E. Davison, where a discussion was held with Mr. J.J. Whelan, the head of the firm, and his son, Mr. J.C. Whelan.

A visit was made to Dudley Road Hospital, Birmingham. Dr. E. Davison discussed the case of [REDACTED] with Dr. G. Hearn, and subsequently examined the former in the ward. Later, a visit

KE 0021350

was made to Wordsley Hospital, Stourbridge, where the case of Mr. M. Whelan, an in-patient, was discussed with Dr. Walker and Dr. S.V. Kalinowski, residents in the hospital. M. Whelan was subsequently examined in the ward.

A.F.R.D., STOURPORT

Tank History

The tank concerned in the incident is a cylindrical rivetted tank, 102 feet in diameter, 25 feet high, 4000 tons capacity, with a fixed roof, mercury sealed, and has two manholes, each approximately 30 inches in diameter, one at the bottom of the tank, and one placed eccentrically on the roof. The roof of the tank is at approximately ground level. There is a ditch approximately six feet deep, and three feet wide, in concrete, surrounding the tank. From the ditch the embankment surrounding the tank slopes steeply away to the ground level.

It was stated that Tank No. 3 was firstly put into commission in 1937, and used for base spirit. From 1941 to early 1947 it had contained loaded gasoline, some of which contained 5.5 c.c. T.E.L. per gallon. In late 1947 the tank was filled with water to a depth of approximately 20 feet. It was out of commission until mid-July, 1950, when the water was removed to about one foot from the bottom. The roof man lid had been removed prior to the pumping operation. The bottom man lid was removed on the 8th August. The ventilation of the tank was that by natural wind through the two man lids. The tank had not previously been cleaned.

Tank Cleaning Contractors

The contractors for the tank cleaning are Messrs. J. Whelan and Sons, 204 Pitsford Street, Birmingham 18.

Tank Cleaning

The history of the tank cleaning operation is not clear. There are marked inconsistencies in the stories of the tank cleaners. The following men have been involved in the tank cleaning, and are listed in the estimated approximate order of exposure to tetraethyl lead: [REDACTED] and [REDACTED]

It would appear that [REDACTED] was on the site about the 10th September, and that [REDACTED] was with him on the 7th and 8th, preparing for the tank cleaning operation. They were probably in and out of the tank without protective equipment at this time. They also arranged for the pumping of sludge and prepared the pit for the burial of sludge. [REDACTED] probably started on the job on about Monday, 11th September. M. Whelan was last on the site on the 12th September. His brother, [REDACTED], took over his supervisory duties on Wednesday, 13th September. Statements made by the men regarding the time they worked on the site are given in the case histories.

It would appear that on the afternoon of Monday, 11th September, [REDACTED] and [REDACTED] entered the tank without any protective respiratory equipment, and were probably in the tank

RE 0021351

from three to four hours. They both entered the tank again in the forenoon of Tuesday, 12th September, and remained there until lunch time. They did not feel well, so stopped work for the day. On that day, [REDACTED] was also in the tank, but for how long it is difficult to determine. [REDACTED] stated that he was in the tank on both Monday and Tuesday, the 11th and 12th. [REDACTED] stated that [REDACTED] was in the tank about half to two hours in all. [REDACTED] in his present state of mind, cannot be sure what occurred. [REDACTED] stated that he returned to the site on Monday, 18th. This is disputed by others. [REDACTED] and [REDACTED] remained on the job intermittently until the 26th September. Mr. [REDACTED] the head of the firm, had been on the site on one day only, and possibly entered the tank for a short time without respiratory protection, although that he entered the tank at all is disputed.

Bathing facilities were available at the blending plant, but were not always utilised by these men, on their own admission. It would appear that their working clothing, worn underneath the protective equipment provided by the contractors, was at times soiled by the tank contents.

On approaching the tank on the afternoon of Tuesday, 26th, a marked odour of organic lead was detectable in the ditch surrounding the tank, into which part of the sludge water had been run. Immediately following this observation, two bare hands appeared from the bottom manhole of the tank, carrying a bucket of slurry, which was decanted into the ditch. Mr. Prowse immediately ordered the cleaners out of the tank. They made their exit wearing cannister type respirators, and two of them were ungloved. The three men involved were Messrs. [REDACTED] and [REDACTED]. They were clad in cotton dungarees, which were soiled, waterproof capes, varying types of headgear and rubber boots. All had gloves available. During a discussion with the visiting party, Mr. [REDACTED] stated that if the party had visited the site the previous day, they would have seen all wearing positive pressure air line hose respirators, but as they, the cleaners, had anticipated finishing off the tank quickly on that afternoon, they saw no particular necessity to wear air line respirators, especially as the sludge which remained to be removed was scattered throughout the tank.

Dr. Davison took Mr. [REDACTED] aside, and had a long conversation with him. During this, it was noticed that Mr. [REDACTED] was wearing his ordinary shirt and tie, both of which were stained, and that there was a definite odour of organic lead from the clothes he was wearing. Mr. [REDACTED] made various remarks about the difficulty in cleaning, their lack of experience in cleaning this particular type of tank and exhibited a definite lack of knowledge of the hazards involved from sludge bearing lead. It was learned also from this conversation that he had not slept for some time, had diminution of visual acuity, was forcing himself to eat, felt horribly tired, but was trying to work it off, and that he did not want to give up as his brother had done. It is evident that this man was suffering from tetraethyl lead poisoning. He was pale, somewhat anxious, and had quite a noticeable tremor of the facial musculature.

KE 0021352

On that day, [redacted] is difficult to determine. [redacted] stated that he was in the tank on both Monday and Tuesday, the 11th and 12th. Bert Cart stated that [redacted] was in the tank about half to two hours in all. [redacted], in his present state of mind, cannot be sure what occurred. [redacted] stated that he returned to the site on Monday, 18th. This is disputed by others. [redacted] and [redacted] remained on the job intermittently until the 26th September. Mr. [redacted], the head of the firm, had been on the site on one day only, and possibly entered the tank for a short time without respiratory protection, although that he entered the tank at all is disputed.

Bathing facilities were available at the blending plant, but were not always utilised by these men, on their own admission. It would appear that their working clothing, worn underneath the protective equipment provided by the contractors, was at times soiled by the tank contents.

On approaching the tank on the afternoon of Tuesday, 26th, a marked odour of organic lead was detectable in the ditch surrounding the tank, into which part of the sludge water had been run. Immediately following this observation, two bare hands appeared from the bottom manhole of the tank, carrying a bucket of slurry, which was decanted into the ditch. Mr. Prowse immediately ordered the cleaners out of the tank. They made their exit wearing cannister type respirators, and two of them were ungloved. The three men involved were Messrs. [redacted], [redacted] and [redacted]. They were clad in cotton dungarees, which were soiled, waterproof capes, varying types of headgear and rubber boots. All had gloves available. During a discussion with the visiting party, Mr. [redacted] stated that if the party had visited the site the previous day, they would have seen all wearing positive pressure air line hose respirators, but as they, the cleaners, had anticipated finishing off the tank quickly on that afternoon, they saw no particular necessity to wear air line respirators, especially as the sludge which remained to be removed was scattered throughout the tank.

Dr. Davison took Mr. [redacted] aside, and had a long conversation with him. During this, it was noticed that [redacted] was wearing his ordinary shirt and tie, both of which were stained, and that there was a definite odour of organic lead from the clothes he was wearing. Mr. [redacted] made various remarks about the difficulty in cleaning, their lack of experience in cleaning this particular type of tank and exhibited a definite lack of knowledge of the hazards involved from sludge bearing lead. It was learned also from this conversation that he had not slept for some time, had diminution of visual acuity, was forcing himself to eat, felt horribly tired, but was trying to work it off, and that he did not want to give up as his brother had done. It is evident that this man was suffering from tetraethyl lead poisoning. He was pale, somewhat anxious, and had quite a noticeable tremor of the facial musculature.

As a result of subsequent discussion with Mr. Prowse, he decided to stop tank cleaning immediately, pending further investigation of the individuals concerned, for at least two weeks.

All the men concerned in the tank cleaning were interviewed and medically examined by Dr. Davison. The following medical histories should be read in the understanding that some of the individuals concerned are disorientated, and that there was some evasion in admission of misdemeanours. These histories are given in the order in which the individuals were interviewed and medically examined, namely, [REDACTED] on the 26th, and [REDACTED] and [REDACTED] on the 27th.

MEDICAL HISTORY OF INDIVIDUALS

[REDACTED]
90, Church Vale, West Bromwich. Aged 31, married, no family. Occupation - Pipe Fitter.

This man had no previous experience of tank cleaning, and stated that he started work with Messrs. J. Whelan and Sons about three or four weeks ago, and did not know that he would have tank cleaning to do. He had no idea of the hazards involved. (One was informed that he had assisted in the tank cleaning operation at Red Mile, near Nottingham, in August). He stated that he first entered the tank about the 11th or 12th of the month, wearing rubber boots and gloves over his ordinary working clothes. He stated that the positive pressure air line had a double manifold, and that Mr. Whelan, [REDACTED] and he took turns to use this, each being without one for about half an hour. (On subsequent enquiry, one was informed that Mr. Dalchin had suggested the use of a double manifold, two using the air line to work inside, and the other outside, each to spend approximately half an hour in the tank at a time. [REDACTED] and [REDACTED] both stated that they did not use any respiratory protection on the 11th and 12th). This man stated that he felt well on the Monday and Tuesday, but on Wednesday, 13th, he felt giddy, had cold "spells", especially in the shoulders. He was sleepless, and had bad dreams. In one dream he had a very bad "row" with his father-in-law, for whom he has the highest regard and respect. He was very restless, and found difficulty in getting into even a light sleep. His appetite was poor on this day, and he vomited in the evening. He had a "taste like a penny in his mouth all the time". On the 14th he did not go to Stourport, but stayed in Birmingham. His symptoms remained the same, his sleeplessness being worse. On the 15th he went to see his own doctor, whom, he stated, told him he was a "bundle of nerves", and that there was nothing wrong with him. He stayed away from work on the 16th, and 17th, the symptoms remaining more or less the same. He vomited again in the evening. Throughout the day he had suffered with retching. That evening he had a very vivid dream, in which he imagined himself as the Count of Monte Cristo. He seemed to be in a tavern when a bully entered, and he challenged him to a duel, which was fought in front of the king and queen. He got very tired during this duel, but eventually stabbed the bully, and then declared himself to be the Count of Monte Cristo. (This dream had obviously been very vivid, but it is not of the usual terrifying nature). He also shouted in his sleep one night about a horse he had seen on the cinema.

KE 0021354

given in the order in which the individuals were interviewed and medically examined, namely, [REDACTED] on the 26th, and [REDACTED] and [REDACTED] on the 27th.

MEDICAL HISTORY OF INDIVIDUALS

[REDACTED]
90, Church Vale, West Bromwich. Aged 31, married, no family. Occupation - Pipe Fitter.

This man had no previous experience of tank cleaning, and stated that he started work with Messrs. J. Whelan and Sons about three or four weeks ago, and did not know that he would have tank cleaning to do. He had no idea of the hazards involved. (One was informed that he had assisted in the tank cleaning operation at Red Mile, near Nottingham, in August). He stated that he first entered the tank about the 11th or 12th of the month, wearing rubber boots and gloves over his ordinary working clothes. He stated that the positive pressure air line had a double manifold, and that Mr. [REDACTED] and he took turns to use this, each being without one for about half an hour. (On subsequent enquiry, one was informed that Mr. Balchin had suggested the use of a double manifold, two using the air line to work inside, and the other outside, each to spend approximately half an hour in the tank at a time. [REDACTED] and [REDACTED] both stated that they did not use any respiratory protection on the 11th and 12th). This man stated that he felt well on the Monday and Tuesday, but on Wednesday, 13th, he felt giddy, had cold "spells", especially in the shoulders. He was sleepless, and had bad dreams. In one dream he had a very bad "row" with his father-in-law, for whom he has the highest regard and respect. He was very restless, and found difficulty in getting into even a light sleep. His appetite was poor on this day, and he vomited in the evening. He had a "taste like a penny in his mouth all the time". On the 14th he did not go to Stourport, but stayed in Birmingham. His symptoms remained the same, his sleeplessness being worse. On the 15th he went to see his own doctor, whom, he stated, told him he was a "bundle of nerves", and that there was nothing wrong with him. He stayed away from work on the 16th, and 17th, the symptoms remaining more or less the same. He vomited again in the evening. Throughout the day he had suffered with retching. That evening he had a very vivid dream, in which he imagined himself as the Count of Monte Cristo. He seemed to be in a tavern when a bully entered, and he challenged him to a duel, which was fought in front of the king and queen. He got very tired during this duel, but eventually stabbed the bully, and then declared himself to be the Count of Monte Cristo. (This dream had obviously been very vivid, but it is not of the usual terrifying nature). He also shouted in his sleep one night about a horse he had seen on the cinema.

He stated that he returned to work at Stourport on the 18th. He could not eat his breakfast on this morning. He worked for a short time, when he shovelled earth at the sludge pit. The smell from the pit "turned his stomach", so he went home. He had dreams again that night, but does not remember the details. On

the 19th he worked in fitting jobs, but felt very weak, and tired easily. His arms and legs felt very heavy, and he felt cold and aching all over, particularly in the legs and thighs, which also felt stiff. He had twitchings in his muscles at this time. Some of these caused quite violent "starts". According to his statement, he was again at Stourport on the 20th and 21st. He suffered from palpitation of the heart at this time, his symptoms remaining more or less the same. He had no food at the week-end, 23rd and 24th, and on the latter day he started to have diarrhoea, which has persisted since. He went to the pictures on the 23rd, and had difficulty in seeing the picture. He felt as though he were very far back. He slept badly on the 25th and 26th, and his appetite remained poor. On the 26th he stated that he had had a violent pain in the front of his stomach, from the time he got up, and it was still present. It appeared to be in the muscles, and not internal. Intermittently he had seen double. He had had a rash on his left leg before starting the tank cleaning, and he states that since the sludge got on to it, it has been very irritable, and that he had had violent pains in his toes on that side, and at times has screamed out with the pain. He claims to be abstemious in his habits.

He has retained his soiled works clothing at his home.

On examination he was found to be pale, had an anxious look, tense and apprehensive. He is of small physique. The temperature was sub-normal, pulse rate slow, and the blood pressure normal. He had marked tremor of his left hand and some slight twitching of the facial musculature, especially around the mouth. The tongue was moderately heavy coated, and tremulous. The rash on the left leg has almost healed, and is considered very slight disability. The central muscles of the abdomen, especially below the navel, were extremely tender. There was no evidence of myotatic (muscular) irritability, apart from the face. Apart from the defects noted above, no abnormalities were found in the central nervous, respiratory, cardiovascular and alimentary systems. A sample of urine was obtained for analysis, and a specimen of blood for microscopic examination.

Further samples of urine will be obtained from him for analysis. In the meantime, it has been arranged with his employer that he be employed on open air work, and a report on his condition rendered daily. He was stated to feel "not too bad" on the evening of the 27th.

Comment

The symptoms and signs in this case are compatible with mild tetraethyl lead intoxication. Whether or not the additional exposure on the forenoon of the 26th will aggravate the existing symptoms remains to be seen, but is considered unlikely.

29¹/₄ Durbury Street, Lozells, Birmingham 19. Aged 28, Single. Fitter.

This man had been employed by Messrs. J. Whelan and Sons for approximately three weeks, and the present tank was his first experience of tank cleaning.

K E 0021356

He stated that he started work at Stourport on about the 14th September, when he was engaged in pumping, and was outside the tank all day. On the 15th September he was inside, scraping, and he worked there with an air line hose all day, and he was dressed in dungarees, rubber boots, and gloves. He stated that he had a lot of beer to drink that night, and, contrary to his usual custom, he could not sleep. He was restless, but had no dream. On the 16th he did not work at Stourport, but slept badly that night. On the 17th he was restless all day, going off his food, and he got no sleep that night but had no dreams. On the 18th and 19th, he did not go to work, had little appetite, but slept. On the 20th he returned to Stourport. He does not remember how he felt that day, but was still off his food. On the 21st he was not at Stourport, and had a very bad dream which he remembers vividly in which he had to eat maggots. On the 22nd he saw double, and that evening he had a dream in which he was in a long dark tunnel, and as he walked down this tunnel, he became smaller and smaller. On the 25th he was again at Stourport, and he felt twitching in his muscles. He slept better on the night of the 25th than he had done for the past week, and his appetite had improved slightly.

On examination, he was of normal appearance. The temperature was sub-normal, the pulse rate and blood pressure were normal. The pupils were unequal. Apart from the above, no abnormalities were found in any of the systems. A sample of urine was obtained for analysis, and specimens of blood for microscopic examination, and arrangements have been made to obtain further samples of urine.

Comment

This man is, in our opinion, a mild clinical case of tetraethyl lead poisoning, and even with the added exposure on the forenoon of the 20th, it is considered that he will become no worse than he is at present, and that he should make a recovery within two weeks.

297, Icknild Street, Hockley, Birmingham 18. Aged 34, married, three children. Occupation - Engineer. Son of the owner.

He has been engaged in tank cleaning at various times for the past twenty years, but had never been engaged in cleaning a tank which contained leaded gasoline, nor one so large. He was normally engaged in the maintenance of petrol pumps in garages. He was evasive in his answers, and could not give his work periods and symptoms in chronological order.

He first came on to the tank cleaning job on Wednesday, 13th, after his brother had become sick, and stated that he wore a positive pressure air line mask and full protective equipment on that day. On the 14th he had a stomach ache, and was sleepless at night. On or about the 15th he saw double and felt weak, and tired easily. He went off his food, but tried to force himself to eat. It was noticed that he had become pale. He developed a dull frontal headache, and heard telephone bells in his ears, and also had the sensation that people were talking to him. He had some looseness of the bowels, but no pain. He had a "sick

KE 0021357

he had a lot of beer to drink that night, and, contrary to usual custom, he could not sleep. He was restless, but had no dreams. On the 16th he did not work at Stourport, but slept badly that night. On the 17th he was restless all day, going off his food, and he got no sleep that night but had no dreams. On the 18th and 19th, he did not go to work, had little appetite, but slept. On the 20th he returned to Stourport. He does not remember how he felt that day, but was still off his food. On the 21st he was not at Stourport, and had a very bad dream which he remembers vividly in which he had to eat maggots. On the 22nd he saw double, and that evening he had a dream in which he was in a long dark tunnel, and as he walked down this tunnel, he became smaller and smaller. On the 25th he was again at Stourport, and he felt twitching in his muscles. He slept better on the night of the 25th than he had done for the past week, and his appetite had improved slightly.

On examination, he was of normal appearance. The temperature was sub-normal, the pulse rate and blood pressure were normal. The pupils were unequal. Apart from the above, no abnormalities were found in any of the systems. A sample of urine was obtained for analysis, and specimens of blood for microscopic examination, and arrangements have been made to obtain further samples of urine.

Comment

This man is, in our opinion, a mild clinical case of tetraethyl lead poisoning, and even with the added exposure on the forenoon of the 20th, it is considered that he will become no worse than he is at present, and that he should make a recovery within two weeks.

297, Icknild Street, Hockley, Birmingham 18. Aged 34, married, three children. Occupation - Engineer. Son of the owner.

He has been engaged in tank cleaning at various times for the past twenty years, but had never been engaged in cleaning a tank which contained leaded gasoline, nor one so large. He was normally engaged in the maintenance of petrol pumps in garages. He was evasive in his answers, and could not give his work periods and symptoms in chronological order.

He first came on to the tank cleaning job on Wednesday, 13th, after his brother had become sick, and stated that he wore a positive pressure air line mask and full protective equipment on that day. On the 14th he had a stomach ache, and was sleepless at night. On or about the 15th he saw double and felt weak, and tired easily. He went off his food, but tried to force himself to eat. It was noticed that he had become pale. He developed a dull frontal headache, and heard telephone bells in his ears, and also had the sensation that people were talking to him. He had some looseness of the bowels, but no pain. He had a "sick tummy feeling in his mouth", and toothache in his front teeth. These symptoms have more or less persisted since this date until the present time, and he has tried to "work it off". He does not admit to any improvement, nor to his becoming worse.

On examination he was noticed to be pale, with some twitching around the muscles of the mouth and chin. The pulse rate was 60 per minute, the blood pressure 110/70, the temperature sub-normal.

-KE 0021358

Some exaggeration of the reflexes, and a slight tremor of the hands were noticed, but apart from these no abnormalities were detected in any of the systems on examination. A sample of urine was obtained at the time of this examination, and a further one obtained when he was seen the following day. Subsequent samples will be obtained from him. Specimens of blood were obtained for microscopic examination.

Comment

It is considered that this man is a moderately severe case of tetraethyl lead poisoning. He had exposure also at Red Mile, near Nottingham, before going on to the present tank cleaning job. There is a clinical impression that now he has been removed from all exposure, and fully appreciates the nature of the condition, that there is a good chance of his making a full recovery without any marked deterioration in his present condition.

[REDACTED]

204 Pitsford Street, Hockley, Birmingham. Aged 66, married, three children.

He stated that he was into tanks at Red Mile, but that he had not been into tanks at Stourport, and had only spent one day there. He did not admit to any symptoms or signs.

He was very worried about the condition of his son [REDACTED] whom he had seen in hospital on Sunday, 24th. He said that his [REDACTED] had told him that he had had his appendix out before, and had had his appendix out again, and that the stitches were hurting him. He also said that his Michael had told him to go away, when he visited him, and that he wanted the bed lifted, and when he tried to fix the pillows, [REDACTED] had said "No, lift the bed". He said that his son talked a lot of rubbish the whole time he was there, and he was very worried because the Sister in the hospital had asked him if there was any mental trouble in the family. He had assured her that there was not as far as he knew. He had noticed [REDACTED] peculiar in his manner before going into hospital, irritable, and worrying about things that were his, the gaffer's business, and not [REDACTED] had apparently been very tired, and had had difficulty in completing pieces of work given to him.

On examination, there was no evidence of tetraethyl lead poisoning. He has an elevated blood pressure. He felt better when the cause and symptoms of tetraethyl lead poisoning were fully explained to him. He said he would take more care in future tank cleaning jobs. He showed clothing used in the jobs which was being sent to the laundry, and which smelt of organic lead.

Comment

There is no clinical evidence that this man is suffering from tetraethyl lead intoxication.

KE 0021350

133 Antrobus Road, Handsworth, Birmingham. Aged 42, married, four children. Occupation - Pipe Fitter.

This man, a regular employee of J. Whelan and Sons, was examined at Dudley Road Hospital, on the afternoon of the 27th, through the courtesy of Dr. G. Hearn, the physician in charge. He stated that he had helped [redacted] with the preparations for tank cleaning on the 7th and 8th of September, and that he had entered the tank at the same time as [redacted] on the afternoon of Monday, 11th, and forenoon of Tuesday, 12th September. He said that he took no precautions at all, as the quicker the work was done, the better the bonus, and he found "old man Whelan" a very decent employer. In reply to a leading question, he said that he did not use an air line mask, and that the jet in the pump was blocked, and that they had taken the one out of the air compressor for the pump, so that they could carry on with the job. He stated that it was "terrible" working in the tank with the smell, and he felt giddy after a short time. At Tuesday lunch time, both he and [redacted] "felt so bad that they chucked the job for the day". That evening he felt off his food, did not sleep well, was not greatly troubled with bad dreams, but had some vomiting and diarrhoea. A few days later he had numbness and tingling in his hands and feet. He vomited intermittently, and his appetite became worse and worse. The sleeplessness continued, and became, if anything, more intractable. He saw his own doctor, who said it was "nerves" in the first place. He developed some abdominal pain, which became progressively worse. He saw his doctor again, who had him admitted to Dudley Road Hospital on the 20th. One of his chief complaints was that he had difficulty in passing water. He has also passed some blood in his urine. He had also been troubled with muscular twitchings, and noticed "a very bad shaking in his hands". He had not noticed any particular bad taste in his mouth. In answer to leading questions, he said that the bathing facilities at the installation were not laid on, and that they did not bathe on the first few days. As far as he remembered, he did not work at Stourport on Thursday, Friday, Saturday and Sunday, the 14th to 17th inclusive, but was there on the 18th. (One has been informed that he was not at Stourport on the 18th). He further stated that he drove the van to Stourport on this day, and that the smell of the fumes from the motor made him feel very sick. He said that at one time he had carried sludge in a waggon to the sludge pit. (There is no corroboration for this statement). He had been tank cleaning at Red Mile, near Nottingham, in mid August, and did not take any protective measures.

On examination, his colour was good, his temperature and pulse rate were within normal limits. There was no evidence of tetraethyl lead intoxication, (objectively). He had still some difficulty in passing urine, and one had the impression that he was still slightly disorientated. He admitted defects in memory as to what actually occurred during the tank cleaning operation at Stourport. It has been arranged with Dr. Hearn that samples of blood, urine and faeces will be collected for analysis, to be carried out by the A.R.C. and that [redacted]

K E 0021360

This man, a regular employee of J. Whelan and Sons, was examined at Dudley Road Hospital, on the afternoon of the 27th, through the courtesy of Dr. G. Hearn, the physician in charge. He stated that he had helped [redacted] with the preparations for tank cleaning on the 7th and 8th of September, and that he had entered the tank at the same time as [redacted] on the afternoon of Monday, 11th, and forenoon of Tuesday, 12th September. He said that he took no precautions at all, as the quicker the work was done, the better the bonus, and he found "old man Whelan" a very decent employer. In reply to a leading question, he said that he did not use an air line mask, and that the jet in the pump was blocked, and that they had taken the one out of the air compressor for the pump, so that they could carry on with the job. He stated that it was "terrible" working in the tank with the smell, and he felt sick after a short time. At Tuesday lunch time, both he and [redacted] "felt so bad that they chucked the job for the day". That evening he felt off his food, did not sleep well, was not greatly troubled with bad dreams, but had some vomiting and diarrhoea. A few days later he had numbness and tingling in his hands and feet. He vomited intermittently, and his appetite became worse and worse. The sleeplessness continued, and became, if anything, more intractable. He saw his own doctor, who said it was "nerves" in the first place. He developed some abdominal pain, which became progressively worse. He saw his doctor again, who had him admitted to Dudley Road Hospital on the 20th. One of his chief complaints was that he had difficulty in passing water. He has also passed some blood in his urine. He had also been troubled with muscular twitchings, and noticed "a very bad shaking in his hands". He had not noticed any particular bad taste in his mouth. In answer to leading questions, he said that the bathing facilities at the installation were not laid on, and that they did not bathe on the first few days. As far as he remembered, he did not work at Stourport on Thursday, Friday, Saturday and Sunday, the 14th to 17th inclusive, but was there on the 18th. (One has been informed that he was not at Stourport on the 18th). He further stated that he drove the van to Stourport on this day, and that the smell of the fumes from the motor made him feel very sick. He said that at one time he had carried sludge in a waggon to the sludge pit. (There is no corroboration for this statement). He had been tank cleaning at Red Mile, near Nottingham, in mid August, and did not take any protective measures.

On examination, his colour was good, his temperature and pulse rate were within normal limits. There was no evidence of tetraethyl lead intoxication, (objectively). He had still some difficulty in passing urine, and one had the impression that he was still slightly disorientated. He admitted defects in memory as to what actually occurred during the tank cleaning operation at Stourport. It has been arranged with Dr. Hearn that samples of blood, urine and faeces will be collected for analysis, to be carried out by the A.S.C., and that Dr. Hearn will render a full report at the time of discharge from Hospital, which will possibly be in another two or three weeks.

Comment.

This was the case which brought the present incident to the notice of the A.S.C. Dr. Hearn immediately connected the symptoms

KE 0021361

of sleeplessness with the cleaning of the leaded petrol tank, and made a provisional diagnosis of tetraethyl lead poisoning and then went to look up the remaining symptoms to confirm his diagnosis. He spent the entire afternoon in the local medical library reading the literature on the subject, which he did not find particularly helpful. He has been given all the assistance within the power of the Medical Department of this Company.

██████████ was a severe case of tetraethyl lead poisoning, and is now on the way to recovery.

██████████
Delbroughton, Clent, Near Hagley. 38, married.

The behaviour of this man is evident from the foregoing case histories. He was in the tank on the afternoon of the 11th and morning of the 12th September without protection. He had been engaged throughout August in the cleaning of some tanks at Red Mile, near Nottingham. He had been ill since Tuesday, 12th, and changes of temperament became progressively more marked. He was admitted on the 18th September to Wordsley Hospital, Stourbridge. On admission, he was seen by Dr. Walker, the Junior Resident, who found him markedly mentally disorientated, excited, anxious and apprehensive. There was a marked tremor of the hands, tongue and face. He had a sedative, which had very little effect on him. He kept all the patients in the ward awake for a few nights. His condition was characterised by alternative improvement and relapse. Shortly after admission he shouted out "I have got tetraethyl lead poisoning. I am dying. Four other men have died." On the next day he said "You had better get the other four in here, as your treatment is making me well." Later, apparently, he got out of bed, and ran up and down the ward without his pyjama trousers on. He also threw food offered to him at a nurse, and made attempts to throw water over the Ward Sister. He also made a dash for the Ward Corridor, shouting that he was going to stop the children crying outside.

On speaking to him in the ward, he was fairly lucid, but had some defect in memory, especially of recent events. He could not remember ██████████ name, nor was he at all clear on the chronological order of tank cleaning. He also mentioned the changing of the jet from the air compressor to the pump. He did not see why he should wear respiratory protection when there was a manhole open at the bottom of the tank, and another at the top, and wind blowing through. After all, he said he had to get the job done if he were going to make any money, and it was more difficult to work with protection. He could not remember whether he had a sister or not, and then remembered that he had one. He could not remember whether she had any children, and then remembered she had one small child. When asked if he had a farm, he said, "No," and then, hesitantly, some minutes after, said, "I have a small one". This statement is true. He did not remember his father's visit on Sunday, nor his behaviour on that day. He remembered two very vivid dreams, one when he was wanting to get into the corridor, but could not do so because there were dozens and dozens of nurses running past him, and the only way he could stop them was to throw water over them. In the other dream there was a lot of rain, and children crying

0021362

RE

Library records find particularly helpful. He has been given all the assistance within the power of the Medical Department of this Company.

██████████ was a severe case of tetraethyl lead poisoning, and is now on the way to recovery.

████████████████████

Belbroughton, Clent, Near Hagley. 38, married.

The behaviour of this man is evident from the foregoing case histories. He was in the tank on the afternoon of the 11th and morning of the 12th September without protection. He had been engaged throughout August in the cleaning of some tanks at Red Mile, near Nottingham. He had been ill since Tuesday, 12th, and changes of temperament became progressively more marked. He was admitted on the 18th September to Wordsley Hospital, Stourbridge. On admission, he was seen by Dr. Walker, the Junior Resident, who found him markedly mentally disorientated, excited, anxious and apprehensive. There was a marked tremor of the hands, tongue and face. He had a sedative, which had very little effect on him. He kept all the patients in the ward awake for a few nights. His condition was characterised by alternative improvement and relapse. Shortly after admission he shouted out "I have got tetraethyl lead poisoning. I am dying. Four other men have died." On the next day he said "You had better get the other four in here, as your treatment is making me well." Later, apparently, he got out of bed, and ran up and down the ward without his pyjama trousers on. He also threw food offered to him at a nurse, and made attempts to throw water over the Ward Sister. He also made a dash for the Ward Corridor, shouting that he was going to stop the children crying outside.

On speaking to him in the ward, he was fairly lucid, but had some defect in memory, especially of recent events. He could not remember Cart's name, nor was he at all clear on the chronological order of tank cleaning. He also mentioned the changing of the jet from the air compressor to the pump. He did not see why he should wear respiratory protection when there was a manhole open at the bottom of the tank, and another at the top, and wind blowing through. After all, he said he had to get the job done if he were going to make any money, and it was more difficult to work with protection. He could not remember whether he had a sister or not, and then remembered that he had one. He could not remember whether she had any children, and then remembered she had one small child. When asked if he had a farm, he said, "No," and then, hesitantly, some minutes after, said, "I have a small one". This statement is true. He did not remember his father's visit on Sunday, nor his behaviour on that day. He remembered two very vivid dreams, one when he was wanting to get into the corridor, but could not do so because there were dozens and dozens of nurses running past him, and the only way he could stop them was to throw water over them. In the other dream there was a lot of rain, and children crying outside, and he kept trying to go out and stop them.

He admitted to becoming sleepless shortly after being in the tank, being sick, giddy, having headaches, dimness of vision, some double vision, a bad taste in the mouth, abdominal pain, and he thought he had had diarrhoea, but was not sure. At the present

KE 0021363

time he is complaining of tingling in lips and tongue. From the ward records, he had apparently no changes in temperature, and no marked changes in pulse rate, respiratory rate and blood pressure, but if anything the blood pressure had gone up. At the present time there are no clinical signs of tetraethyl lead intoxication, although he is still disorientated. Arrangements have been made for the collecting and forwarding of samples of urine for analysis. Dr. S.V. Kalinowski will render a report when he is discharged, which will probably be in two or three weeks' time.

Comment

This man has been and still remains, a severe case of tetraethyl lead poisoning. It is noteworthy that although he gave a lead in his delirium that he was suffering from tetraethyl lead poisoning, no notice was taken, and he was treated as a psychotic case. The diagnosis was realised only after discussion with the two medical officers concerned.

Summary and Observations

Five cases of tetraethyl lead poisoning in tank cleaning are outlined in lay terms. The above report if read in conjunction with the report by Mr. R.R. Biggs will make evident the dangers of partial or token observations of the minimum precautions necessary for safety in tank cleaning. As in past unfortunate instances of this type, ignorance on the part of those involved, the proclivity of tank cleaners to take risks, and the particular difficulties in the cleaning of tanks of the type involved bring stress on the necessity for efficient, skilled, knowledgeable and constant supervision of workmen engaged in cleaning tanks which have contained leaded gasoline. The necessity for the careful observation of recommendations for clothing, bathing and handling of contaminated articles is also clearly demonstrated.

One would like to express thanks for the help and co-operation extended by the Regent Oil Company Limited in the investigation and particularly to Mr. R. Balchin.

E. DAVISON
29.9.50

KE 0021364