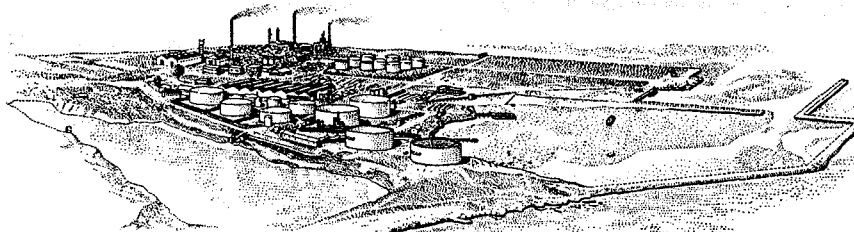


# ADMINISTRACION NACIONAL DE COMBUSTIBLES ALCOHOL Y PORTLAND

DIREC. TELEG.  
"ANCAP"



CASILLA DE  
CORREO 869

25 DE MAYO 409  
MONTEVIDEO  
(URUGUAY)

GERENCIA

March 31, 1941.

SUMMARY OF A REPORT SUBMITTED TO A.N.C.A.P.'s BOARD OF DIRECTORS BY DR. ROMULO ARDAO, PHYSICIAN OF SAID INSTITUTION, ON MARCH 6, 1941.

The studies were started six months after the installation of the Oil Refinery and the first report was submitted one year later, in March 1938. This first report insists particularly on blood modifications, poliglobuliae and linfocitoses, tending to the inversion of the leucocitary formula into cephalalgiae and digestive troubles.

50 clinical histories have been documented since the Refinery was started.

## BLOOD MODIFICATIONS:

### POLYGLOBULIAE:

One case with 10.000.000 red globules.  
Three cases with 8.000.000 id. id.  
Three cases with 7.000.000 id. id.  
Six cases with 6.000.000 id. id.  
Eleven cases with over 5.500.000 id. id.

If we take as percentage "over 6.000.000", then we have in the 50 histories a 26% of polyglobuliae. These are not permanent; after a variable period they fall back into normality; some of them turn into anemia and others present repeated alternate periods of polyglobulia and light anemia.

### LYMPHOSITOSEs:

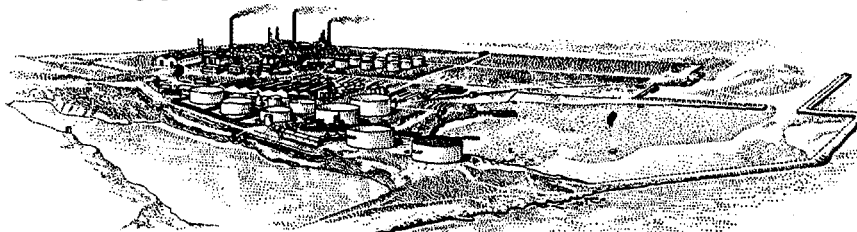
Considered from 30% up. Oscillating between 30 and 55% they make an 82% in the fifty histories.

### ANEMIAE:

These are light anemiae showing between 3.700.000 and 4.300.000 and are important because they affect workers having formerly had polyglobulia.

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One of them who paid a heavier tribute to such an intoxication, showed in November 1939, 4.100.000 red globules. He stayed away from his work, on medical leave, in the country and on the shore, with injections of liver, and yet his anemia advanced more and more, and one month later he showed 3.700.000 red globules, which means that the intoxication persisted even after having taken the patient away from the injurious medium. Only after three months of intense treatment he showed 4.600.000 red globules. This worker was transferred to another section and kept away from the Plant by medical prescription. When he entered the Refinery he was a young man with a perfect health.

## EOSINOPHILIA:

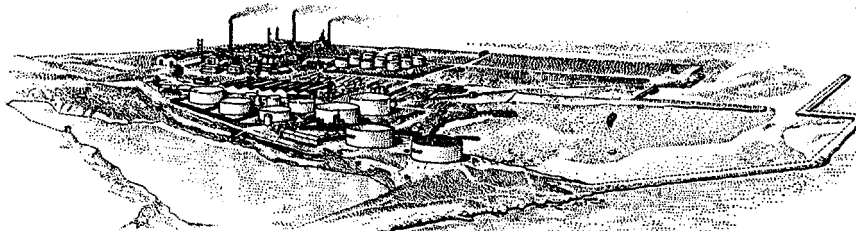
Considered over 5% it is equivalent to 26% of the cases studied. But in our medium a 4% is an evidence of pathologic blood. If we consider it thus, we have the 34% of the cases observed.

## DIGESTIVE TROUBLES:

Well proved in persons who did not feel them before entering the service of the Refinery. Drowsiness after the meals, a sore and burning stomach, vomits, nauseousness, lack of appetite, persistent costiveness. This affects the 34% of the workmen under observation, but most of those working in the Refinery suffer from a light dyspepsia. These troubles are accompanied by a gastro-duodenal irritation which has been radiologically observed by Dr. Camilo Menendez, a radiologist working with Dr. Barcia, and specialized in digestive troubles; for better illustration I am transcribing one of the reports in connection with a workman who had been two years at work in the Topping Unit. In the radiological examination of Mr. A.N.'s gastro-duodenal trouble, we have observed morphological and functional peculiarities quite common among the workers of said Section, i.e.: and hypertonic stomach, contracted, with persistent spasms in the region of the antrum and the pylorus, and therefore, notwithstanding the Hypertonia and the Hypertnesia its emptying is somewhat slackened. On examining the general plate,

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your will find a contracture of the pylorus and the bulb which lead us to think of an organic duodenal lesion, but this was discarded after examination of the series' plates enclosed. Conclusion: gastro-duodenitis of the type common among the gastric patients of said Section." A similar gastro-duodenitis affected twelve of the workers under observation. This would make up a 24%, but it cannot be considered an absolute value, because the report was exactly the same for all the men which underwent observation, and if I had sent 50 workmen for radiological examination, the figure would have been higher.

## CEPHALALGIAE:

They make up a 42% of the workmen examined. This is a very frequent symptom among the men working in our Refinery and is related with the intoxication.

## PAINS IN THE LOWER LIMBS:

The workers in the gas area suffer frequently from pains in the lower limbs. The symptom masks up a 100% among those working in the gasoline treating plant. I have further found some several well-proved cases of polyneuritis and a long medical leave had to be granted to the workmen feeling this symptom.

## INSOMNIA:

Persistent in a 4% of the cases, but light insomnia is far more frequent.

## DROWSINESS (16%).

It appears when the men are very intoxicated. They sleep from 12 to 14 hours and it is not enough for them. They fall asleep in the omnibus. When they are on leave a period of 7 to 8 hours fully satisfies them.

## GIDDINESS (16%):

A workman who has been for a little more than one year in the Refinery and in whom this intoxication has been most violent, feels not only giddy but suffers from actual vertigo, and on turning his head he feels as if he were going to fall and has to fix some stationary object in order to avoid falling.

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## CONSIDERABLE LOSS OF MEMORY (12%)

Some workmen which had a very good memory now forget everything and are obliged to write things down in order to obviate this trouble.

## CHARACTER CHANGES, 6%.

Well proved irritability in formerly good-tempered persons.

## GENITAL IMPOTENCE. 6%.

Surprising in 25-year old workers. I believe the percentage is still higher and also that the men do not disclose it out of shame. It coincides with the other troubles.

The histories are rich in particulars which cannot be discussed in a report.

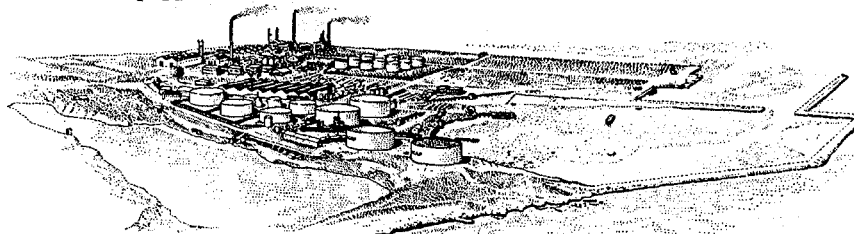
The atmosphere of the Refinery undoubtedly alters the health of the men therein working. Our Refinery is quite modern and shows all the comfort which time and experience have been able to create. Due ventilation has been supplied thus improving the atmosphere in the Units. One liter of milk is daily supplied, at the expense of the Institution and by medical prescription to the men working in the gas area, and two liters to those working in the gasoline treating plant. This has been going on for three years (the Refinery was installed four years ago). The only men wearing protective masks are those working with tetraethyl lead and those effecting tank measurements.

The above mentioned hematological and clinical syndrome shows in almost the totality of the men working in the gasoline treating plants and in a 30 to 40% of the men working in the cracking and topping units, laboratory, main pump-house and in tank measurements.

RE 0013515

# ADMINISTRACION NACIONAL DE COMBUSTIBLES ALCOHOL Y PORTLAND

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CASILLA DE  
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GERENCIA

April 1st., 1941

Mr. Robert A. Kehoe, M.D.  
University of Cincinnati  
College of Medicine  
Kettering Laboratory of Applied Physiology  
Eden Avenue  
CINCINNATI

Dear Dr. Kehoe:

I received in due time your letter of Feb. 7th., and the literature applying to investigations on Industrial Hygiene practiced by your Laboratory, which although highly interesting, do not refer exactly to the point, as you state.

The cases observed in regard with ANCAP, are not accidents nor acute intoxications, but light troubles, with quite fixed characteristics, and too much generalized not to be attributed to the emanations of gases in the petroleum refining. As an accessory detail I should point out that they are observed more frequently when processing Venezuela crude petroleum, which has a higher sulphur content than those of Ecuador and Peru.

It is interesting to add that the slight phenomena involved, such as indisposition, cephalalgia, etc., decrease when the wind is strong, particularly from the East, which blows directly into the openings of the workshops, and which is cold. The task is accomplished in the general process work without masks. The working day is divided in two four hours turns with a four hours rest between both turns.

It would therefore be interesting to know in which operations masks are used in your country, and the precautions used in the tasks of the topping, cracking, cleaning of tanks, welding of drums, in the laboratories, etc.

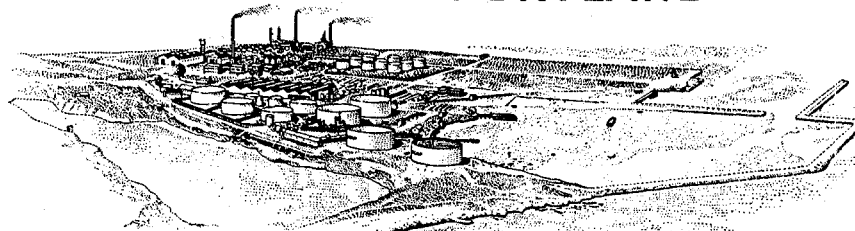
I am sending you herewith an abstract of the clinical records with the symptoms observed, their frequency

RE 0013516

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and the results of blood analysis, concerning which I would like to know your opinion.

I wish to thank you for sending me the laboratory method for lead determination, as well as the Associated Ethyl Company Ltd. for the one year subscription to the Journal of Industrial Hygiene & Toxicology.

As to the men who work in the tetraethyl, I had them examined at the beginning of this year, performing a blood examination after their daily task; the analysis gave no chromogenic granulations. In these days I will practice a new clinical and laboratory examination.

I await with the greatest interest your valuable opinion concerning these data which I submit to your consideration, particularly considering that there is very scarce literature on this concern, regretting that your stay here has been so short, since it could have been highly useful.

Nevertheless I remember your sojourn with a great satisfaction, since it has given me the opportunity of meeting you as well as consulting you on these particulars, and I hope you may be able to repeat your visit.

In case of my possible return to the United States you may be sure that I shall have a great pleasure in paying you a visit in Cincinnati.

With kindest regards, I remain,

Sincerely yours,

Orig.by reg.mail.  
copy by airmail.

Rafael Schiaffino

KE 0013517