Bill Lawrence's Recollection of Organic Lead Handling Practices at the New Zealand Refining Company, 1964-2000

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Bill Lawrence

Employee/Operator at NZRC from 21st of July 1964 to July 2000

To whom it may concern;

The New Zealand Refining Company Operators were expected to rotate among all operating activities/positions including white oil blending. Tetra Ethyl and/or Tetra Methyl lead (TEL/TML) was imported (TEL in the initial stages) into New Zealand from OCTEL, Ellesmere Port England and added to gasoline to extend the octane rating. White oil blending involved making gasoline to a recipe that included TEL/TML until the government excluded this compound in the early 1980's.

Medical monitoring was performed for operators who worked with the TEL drum handling system.

In the 1960's TEL/TML was imported in steel 205 litre drums typically unloaded at the Harbour board wharf at Marsden Point and trucked to the site by general carriers.

TEL/TML for blending was stored (at NZRC in secure compound) in the white oil area in horizontal storage vessels that were positioned in bunds. The vessels formed an enclosed system, which were vented through kerosene scrubbers. The lead was educted into the gasoline blends

To get the contents of the drums into the storage vessel from where it was used in a blend required a process of:

- Operating steam ejectors to draw a vacuum on the storage vessel
- Rolling the drums onto rollers so as the bung was in the vertical

- Removing the bung and inserting a pickup tube (the drum was then open to the atmosphere)
- Opening the valve on the pickup stick to allow the TEL/TML to be sucked out of the drum
- When the drum was empty, (visible check) remove the pickup stick and place it in the holder
- Close the bung and remove the empty drum to storage
- Replace the drum and repeat the process.

Protective white (so you could see yellow lead contamination) clothing was worn by the operators as well as forced air respirators. The pickup sticks were contaminated with liquid lead and were handled by the operators. The drums were extremely heavy due to the material contained.

Educting lead was heavy physical work and operators were reliant on a single barrier of Personal Protective Equipment which was fallible. Occasionally, pressure to meet shipping/blending requirements created stress on the operating staff. Anecdotally, in later years I have heard of the practise by some operators of removing the exhaust valves from the pressure respirator to make it easier to breathe during the heavy work.

A reported incident involved a ships officer who was seriously contaminated with lead when he was below decks reviewing drums (general cargo) damaged during a storm off our coast, he was landed at Wellington.

In the 1970's a complete new system (owned and installed by OCTEL but operated by NZRC) was built on site. A purpose built OCTEL tank ship then delivered TML/TEL direct into the storage tanks from where it was educted into blends. This facility was removed by OCTEL during the early 1980's when Government changed the specification of gasoline to exclude the addition of lead to meet WHO standards

Bill Lawrence

Safety Adviser to the New Zealand Refining Company

(1993-2000) Retired
