

Editorial

Simon Paul Attard Montalto

The guest editorial relates to a remarkable disregard for health and safety (H&S) at work resulting in four fatalities at the height of world war two in Malta. The author, then a seven year old boy, witnessed the event and should be commended for doggedly researching the facts, until finally revealing the sequence of events that led to this tragedy. Eighty years later, and similar events with fatalities at work continue with depressing regularity – only now, the extenuating circumstances associated with a world war that, to a large extent, allowed this lapse in safety back in 1942, simply do not exist. In contrast, in 2023, there are no excuses that can ‘justify’ the general sloppiness and, in many cases, the total disregard of anything to do with H&S that prevails on a daily basis in numerous workplaces in Malta. Indeed, those in authority in 2023 should learn from the lesson presented by their counterparts in 1942 who took immediate and effective action to address their own H&S crisis almost a century ago!

Simon Paul Attard Montalto
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COVER PICTURE

'The Maltese *Gilju*' - Acrylic on canvas, 2.5m by 70cm

Faye Borg Grech is an educational psychologist by profession who always had a love for art. It started as a young girl's hobby, then obtaining her ordinary and intermediate levels in art. Art is no longer just a hobby, but also an escape from the busy days and the troubling thoughts.

Ms Borg Grech obtained her degree and masters in psychology, and more recently her warrant. She works with the church schools supporting children and adolescents with any learning and mental health needs. She married her husband Luke in 2021. Due to COVID-19 restrictions, the wedding turned into an intimate and beautiful ceremony.

She is an admirer of nature and animals, especially cats. She is the proud owner of an energetic ginger tabby and a very vocal Siamese cat. Most of her artworks will involve an aspect of nature.

Fatal Aviation Fuel Exposure

Herbet M Lenicker

ABSTRACT

In 1942, 70 of 250 labourers were admitted to St Aloysius War Hospital suffering from respiratory and neurological symptoms of varying severity following inhalation of Royal Air Force (RAF) 100-octane aviation fuel fumes in a poorly ventilated Mtarfa railway tunnel. Four died later in hospital. This incident is re-visited in the light of new information, and given its implications to Health and Safety that are still relevant today.

Background

In 1942, during the height of World War Two, three quarters of St Aloysius College (SAC) in Birkirkara, Malta, was being used as a civilian hospital for men. SAC had been requisitioned by the Medical and Health Department for the duration of the war. The college theatre served as the largest ward, whilst the rest of the building and playing fields continued to be used as a Jesuit College for boys.

The author, then a seven year old was a pupil at SAC and frequently visited the hospital where his grandfather worked. During one hospital visit 80 years ago, he recalled a horrific scenario when six well-built male patients were admitted acutely in considerable distress. All were crying loudly, confused and agitated. Four of them died shortly afterwards. The author overheard that they had been handling fuel in a railway tunnel at Mtarfa, but there was no public announcement to that effect.

DOCUMENTATION

After many years of searching, a relevant report was found on the website of the Royal Army Medical Corps (RAMC) with reference to "Encephalopathy" published in the Malta Garrison Report, 1942.¹ This graphic description accurately recalls the distressing, acute clinical situation witnessed by the author in 1942, as follows:

Encephalopathy RAMC report¹

"In Dec 1942, 70 out of 250 labourers were admitted to St Aloysius War Hospital, Birkirkara, with varying severity of neurological symptoms. Four died in hospital. The carriers and stackers had been employed by the Civil Government in

unloading and stacking leaking cans of Royal Air Force (RAF) 100-Octane fuel containing tetraethyl lead (TEL) in a disused, poorly ventilated railway tunnel in Mtarfa.

The men had been working for some weeks in 12 hour shifts with an hour break for meals with two other breaks of half an hour each . . . The carriers took ten minutes to transport a carton of two four gallon petrol cans to the end of the tunnel and another ten minutes to reach the open end for the next load.

. . . the stackers were the most affected. Mild cases had soreness of eyes and throat, headaches, nausea, and breathing difficulties. The more severely affected had vertigo, loss of power in their legs, profuse salivation, involuntary jerking of the muscles of the face and hands (myoclonus), and loss of consciousness.

One labourer aged 38 years had been working for four weeks in the tunnel prior to the onset of his symptoms. On the 15th of December 1942, he complained of giddiness, headache, difficulty in swallowing, profuse salivation and lower limb weakness. He was admitted to St Aloysius College Hospital on the 25th of December. He became delirious and incontinent with a coarse tremor of the upper limbs. He lapsed into a coma and had generalized convulsive movements for two to three days prior to his death. His post mortem showed brain oedema and petechial haemorrhages in the subthalamic region. It was concluded that the symptoms were due to intoxication from petrol fumes rather than tetra ethyl lead (TEL)".¹

COMMENTARY

The conclusion in the post-mortem report was at variance with clinical concerns relating to TEL within the Department of Health.¹ Given the lipophilic properties of TEL, it can be absorbed through the intact skin, and TEL vapour is readily absorbed through the pulmonary epithelium. Its fat solubility allows localisation in the nervous tissues making it neurotoxic.⁵ Indeed, TEL poisoning would explain several of the nervous manifestations suffered by the victims. These were not dissimilar to known

complications following severe TEL exposure and intoxication including vomiting, delusions, hallucinations, mania, psychotic behaviour, seizures, intense hyperactivity, facial contortions, cerebral oedema, encephalopathy, coma and death.

The toxic agent, RAF 100-octane fuel was developed in 1921 by Thomas Midgley Junior, at General Motors, USA. He showed that lead, made soluble in gasoline as tetraethyl lead (TEL), could quench the free radicals responsible for the 'cool' flame in engines that caused 'knocking'. This boosted engine power, especially if the octane rating of the gasoline was increased to 100 or above.² In practice, when used in Spitfire and Hurricane fighter aircraft engines, it afforded a significant advantage over enemy aircraft during air combat. This fuel was very expensive and had to be brought to Malta from the USA. When supplies were threateningly low, the fuel was delivered to Malta by submarine.³

Handling the fuel when it arrived in Malta was very challenging. According to the Operational Report on the 24.11.1942, members of the 1st Battalion of the 1st Cheshire Regiment experienced great difficulty unloading the cartons containing RAF 100-octane petrol. The fumes were very pungent, and the men could only work for a short time in the ship's hold.³ The vital fuel was then transported inland and stored in the underground safety of the disused but poorly ventilated railway tunnel in Mtarfa.

NEW INFORMATION

A recent search in the local press revealed that the incident under review was never reported. This may have been for security reasons relating to a special fuel in that critical stage of the war. Indeed, the event occurred at the height of the air battle for Malta, when very harsh siege conditions prevailed. Nevertheless, based on information obtained from the National Archives of Malta (NAM, file 6774/42 from the Lieutenant Governor's office),⁴ it is evident that safety arrangements in the Mtarfa tunnel were inadequate. Safe ventilation for the manual storage of this hazardous fuel in the tunnel was totally absent. Moreover, many of the handling procedures were carried out in conditions of prolonged exposure as well as inadequate ventilation which would not have been tolerated in peace time.⁵ Maltese labourers worked for 12-hour shifts in the tunnel carrying leaking fuel cartons for $\frac{3}{4}$ of a mile. The stackers, however, remained in the same place

storing fuel cartons and, not surprisingly, were more severely affected by the fumes.

The experience of similar incidents in the UK seems to have been limited to single cases of tetraethyl lead (TEL) intoxication inhalation during tank-cleaning.⁵ A telegram from the fuel company, Shell, in London dated 10.7.1943 was received in Malta after the local incident occurred. This reported sickness and death in operators handling leaded fuel in under-ventilated areas.⁶ The incident in Malta which led to four fatalities in 1942 seems to have been the first experience locally.

CGMO'S INTERVENTION

Although the incident is not specifically mentioned in the CGMO's Annual Reports of 1942 and 1943,^{7,8} these patients were probably included under the heading 'Return of Diseases and Deaths of Inpatients in General Hospitals in Malta', as follows: "Injury due to poisonous gases 164 /1942 or due to lead poisoning 78/1943". Further clinical information is unavailable.

On the 24.10.1942, the Chief Government Medical Officer, Professor Albert V. Bernard, officially notified the Secretary to Government that several reports had been received of TEL poisoning due to handling petrol in the under ventilated Mtarfa tunnel.⁹ Six men had been hospitalised and one had died up to the time of writing. He pointed out that ventilation in the tunnel was inadequate.

Professor Bernard recommended that without delay:

- a) ventilation be improved
- b) men engaged in this work should not work for longer than 2 hours at a stretch
- c) men showing incipient signs of illness should be immediately relieved from work and
- d) arrangements be made for RAF medical surveillance and attendance to be available for these men on the spot.

A rapid response and remedial action followed the CGMO's letter. Indeed, an official telephone message on 28.12.1942 reported that Lt. Col. Bartolo had withdrawn all his men from the tunnel, and that work on the tunnel ventilation shafts was ready to start on the 29.12.1942.¹⁰

In a letter dated 30.12.1942, Mr Nunn, Assistant to the Lieutenant Governor, HE Lord Gort, confirmed

that work should proceed forthwith with the excavation of ventilation shafts. Importantly, it was conceded that the men engaged in the fume-laden air or near the tunnel should be required to work for not more than 2 hours at a stretch and should then be relieved for 2½ to 3 hours.¹¹

Following the CGMO's recommendations, the Lieutenant Governor was justifiably greatly concerned and the period of workers' exposure was immediately reduced to 2 hours.¹²

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CONCLUSION

The CGMO in 1942, Professor Bernard, should be commended for enforcing safer working conditions for the Maltese handlers, by limiting the hazards of inhalation of the toxic fuel fumes. Similarly, the prompt and decisive response of H.E. Lord Gort, to prevent further hazardous exposure to the toxic fuel fumes despite the prevailing dire siege situation in the country at the time was remarkable.

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