

*Beneath
the glow*



In Malta, fireworks are the harbingers of summer, joy, and celebration. But news that their chemical leftovers are harming our environment and health cannot be blatantly pushed aside. How do we find the happy medium between heritage and safety? **Gail Sant** writes.

A child laughs with glee as she skips along a narrow rubble wall. Her mother raises an eyebrow—'Tilghabx man-nar,' she calls out. Translated, the saying that warns against 'tempting fate' also literally means 'don't play with fire', ironic when one of Malta's national pastimes is literally fire play—*logħob tan-nar*. Fireworks.

With around 35 known firework factories peppering Malta and Gozo, the tradition can be traced back to the Knights of St John. They used fireworks to celebrate important occasions such as the election of a new Pope or Grand Master, and so the display became rooted in our past and more recent history, evolving with time to become the complex artform that today wins Malta acclaim the world over. But there is more to the story.

Studies have shown that there's a dark side to this flashy spectacle. Some of the chemicals used to create fireworks are harmful, and as a result, each *fešta* leaves behind residue which may be more dangerous than we think.

To get a better idea of the situation, we interviewed two people on opposite ends of the fireworks operation: Mr Karl Rueth, a firework crafter, and Prof. Alfred Vella, an environmental chemist who has studied some of the effects fireworks leave behind after the party is over.

FIREWORKS AND IDENTITY

Rueth is a *Dinglin*, born and raised. Brought up in a village that celebrates one of the most widely recognised patrons on the island, the feast of St Mary, he grew up fascinated by the annual summer bonanzas. The fact that his friends and family were involved helped too.

It surprised no one when he eventually picked up pyrotechnics as a pastime. It's been three years now, and the novelty has not worn off.

'It's an art form. It helps you express yourself, bringing out your unique ideas,' says Rueth. The techniques involved, from developing specific colours to altering the shape of the blast, create a myriad of opportunities for self-expression. That said, Rueth swiftly adds, there's much more to it: 'It's part of our culture. And not just for the village feasts. Every activity you care to mention involves fireworks.'

Think of events like those organised by the Valletta 2018 Foundation or Isle of MTV; all of them make use of these colourful bombs to add energy and charm. 'We advertise our island with imagery of fireworks,' Rueth notes. And yes, a lot of press related to tourism and travel to Malta does feature fireworks. They create spectacles, ones which tourists appreciate and enjoy, and with tourism being one of our most important economic drivers, a glowing skyline and a free show does add value to our little island beyond the sun and sand.

The issue Rueth points out himself is the one with noise. 'Nowadays many people see fireworks as a nuisance. It's a reality we can't escape,' he says, also admitting that unfortunately, there is no real solution for this. Many within the fireworks community believe the bang is as important as the colours. However, 'it's all about balance,' says Rueth.

THE OTHER SIDE OF THE COIN

'If I had to live through a summer where not a single bang would be heard, Malta would have truly lost a part of its identity,' says Vella the ▶

minute we sit down to discuss the issue. Thinking back to his time living in the US, Vella laughs, remembering how it felt a little 'too quiet.'

Much like Sunday School's bells, a firework's distant boom is something we've grown accustomed to, a background noise. However, the comfort that comes with those chimes, flashes, and bangs hasn't blinded him to their negative side-effects.

Vella says that one of the biggest environmental impacts fireworks have is the sheer amount of dust they leave behind. This particulate matter in the air causes many health problems, including respiratory issues such as lung inflammation, while exacerbating others like asthma. Respiratory diseases account for one

in every 10 deaths in Malta, placing them as one of our biggest killers.

Not only does this dust fall in excessive quantity, it also contains chemicals which are either toxic or which, though initially inert, become toxic once they're burned. 'What we were putting in those explosives was remaining around unexploded or in the form of its products,' Vella emphasises.

Antimony, the chemical used to create a glitter effect, changes into antimony oxide, a known carcinogen, when burned in air. Heavy metals that are used to add colour to the explosion include barium. Accumulation of barium in the body can lead to muscle paralysis, gastrointestinal hemorrhage, and even death.

Finally, Vella moves on to the main player in his research—potassium

perchlorate. This chemical is a key ingredient for successful blasts. His studies suggest that a significant amount of perchlorate remains unused after the explosion, settling on our island, both outdoors and indoors. His findings show that the amount of perchlorate dust found indoors is almost twice the amount of China's indoor dust. China, the pioneering country that invented fireworks back in the ninth century is also the country that banned their use in its capital city during the 2018 new year celebrations in an attempt to fight off air pollution.

Related research has also shown that perchlorate can interfere with thyroid function. Currently, there aren't any studies which link the two together locally, but knowing that

Photo by Karl Rueth



Photo by Claudine Despott



there's an excessive amount of this chemical all over our environment isn't great news. 'Why should we have to live side by side with a chemical which is totally alien to our environment?' Vella asks.



Prof. Alfred J. Vella

FINDING BALANCE

Though Rueth and Vella have different ideas of what fireworks mean to them, they both agree that some sort of compromise is needed.

'You need to understand where people are coming from,' says Rueth, adding that for some, noise pollution lasts the whole summer, not just a week. As for their chemical effects, he's 'sure that some harm is caused.' However, he also believes that more research would be beneficial, helping us to understand the topic better. To him, this is not a matter of 'us against them,' but about finding a way to make fireworks safe and enjoyable for everyone.

On that note of safety, Vella thinks that 'it's high time that we control fireworks through making

perchlorate a controlled chemical.' At the moment, of the three main oxidising agents used to make fireworks, perchlorate is the only one which doesn't require permits.

Despite negative media framing, Vella takes a moment to emphasise that he doesn't want an outright ban on fireworks. 'For better or for worse, it is part of who we are.'

At the end of the day, few people can deny that the visuals fireworks give us are mesmerising. But we also need to acknowledge the science. 'Much like alcohol consumption, a little of it is probably not all that damaging. We can tolerate a small impact of fireworks because of the benefits they give us,' says Vella. But we cannot go through life drunk. Just like everything else, moderation is key. **T**



Photo by Isabelle Mallia