

# The Holiday's Biggest Killer

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We are Greta, Sava, and Tesa, 13 year old students at the International School of Lund. In this report we will be reporting about Firework pollution, statistics on carbon emission, Göteborgs FyrverkeriFabrik and their work with fireworks, the public's perspective on lighting fireworks, and how we as people can be more sustainable with these arts of the sky.

New years, and various other celebrations are surrounded with beautiful fireworks, but coming into the 21st century, fireworks might be more than just holiday nightscapes. In fact, fireworks are actually killing the environment, causing air pollution, marine pollution and noise pollution. According to Jtechconst.com, regular fireworks are created with gunpowder, heavy metals and other toxins, including a metal compound in the name of Cadmium. Cadmium is known as a human carcinogen substance that is capable of causing cancer to humans if exposed frequently (Are Fireworks Bad For The Environment). According to 8billiontrees.com, fireworks contain about 35 kg of gunpowder which produces about 17 kg of Co<sub>2</sub>, the equivalent of driving 142 km on a new petrol machine! Fireworks also cause increasing amounts of air pollution due to all of the toxins and chemicals. When ignited, fireworks produce harmful gasses out in the open and occasionally, these gasses are incapable of fully decomposing, poisoning the air around it.



Fireworks don't only pollute the air surrounding them, but also the water nearby. The reason is, because the oxidizers in the fireworks, known as perchlorates, dissolve in the water near the lighting of the fireworks (Kilgore). This oxidizer contaminates the bordering bodies of water, which can lead to contamination of our own drinking water!(Kilgore). In addition, this contamination can affect and impact the marine life found in these bodies of water. According to WWF, 100,000 marine species die annually due to plastic pollution. Fireworks contain plastics and can contribute to these numbers. This includes Aluminum, a material found in fireworks, which can get stuck on fish's gills and can choke them, including various marine animals. But firework pollution doesn't only affect marine life, but life on land too. Due to the bright lights caused by fireworks, wild animals get disoriented

and can even leave their natural habitats. Additionally, the debris from fireworks can get ingested by these animals, killing them.



Göteborgs FyrverkeriFabrik was founded in 1994 by pyro technicians Martin Hildeberg and Anders Hållinder. The company designs and works with the creation of fireworks in Sweden. They have worked on projects at the Eurovision in Oslo, Gothia cup etc. We interviewed one of the founders/CEOs of Göteborgs FyrverkeriFabrik, pyrotechnician Martin Hildeberg and got efficient answers from the interview. Martin informed us that his company avoids using dangerous substances in the fireworks such as mercury, lead, chromium and hexachlorobenzene and demands that “fireworks must not shoot any plastic parts.” Martin's company has actually implemented an environmental management system (SUSA), which helps them improve their sustainability matters. Martin informed us about their annual carbon emissions as a firework company and their recent show in Uddevalla which emitted 347 kgs of Co2 including all transportation, products and travel. “We have a program called EnvCalc that gives us the carbon emission info, which is appreciated by our clients.”, says Martin Hildeberg. Martin's company is involved in around 100 shows annually, as suppliers of fireworks.

We’ve looked through how fireworks are destroying the world, and species above and below water, but why do people still set them up continuously? We interviewed our class and asked if anyone in their family set up fireworks, and we got interesting results. The results show us that  $\frac{3}{5}$  of our class setup fireworks, leaving  $\frac{2}{5}$  of the class which don't. We also interviewed Kosta Bakic, a 16 year old student at Katedralskolan and got some input from him. When asked about his use of fireworks, he replied: “I and my friends set up the fireworks in open areas in Lund, and when we set it up we first put it onto the ground, light it, run to a safe distance and film the boom.” When asked if he would clean up afterwards, he answered: “It depends, if it’s in a cardboard tube, then I would clean the whole cardboard up but the ones on a stick, I would throw the stick away. I don't see others cleaning up.” We also interviewed another local Swedish citizen, Marco Toppino, 47 years old who sets off fireworks on New Years. Throughout the interview he mentioned that after setting up

**HOW TO STAY SAFE WITH FIREWORKS**

- 100+ people get seriously injured by fireworks every year (msb.se)
- Fireworks cause panic attacks and fear in many pets such as dogs (collarofsweden.se)
- Fireworks cause pollution, blocking the sun, and making people sick (sut.se)
- You have to be above 18 to buy and use fireworks in sweden (msb.se)
- Special training & permit is needed to buy/use certain fireworks (aftonbladet.se)

**PLEASE STAY SAFE!**

fireworks, he cleans all of the debris the next morning, showing how he is environmentally aware of what fireworks can do to nature. This is fascinating because, even though fireworks have these implications, many people like Kosta and Marco set them up around Sweden, which shows us a different perspective.

There are many ways in which one individual could help reduce the amount of pollution caused by fireworks. The first thing that could be done, is to reduce the overall usage of fireworks throughout the year by limiting them to one holiday a year. When firing fireworks, you can aim for buying smaller green fireworks or minimal-colored fireworks that contain a reduced amount of polluting metals. Also, buying environmentally friendly fireworks is a better option because they contain a nitrogen-based clean fuel (kilgore). Lastly, after launching fireworks, make sure to clean up the debris and dispose of it properly.

Overall, fireworks pollute the earth in many ways, and are created with very harmful toxins. Göteborgs FyrverkeriFabrik is a factory that not only creates fireworks but demands to create their fireworks with sustainable substances and can be a great substitute for individuals who like to set up fireworks in Sweden. After seeing these positives and negatives with fireworks we believe that other firework companies should start thinking like Göteborgs FyrverkeriFabrik so that the whole world can enjoy environmentally-friendly fireworks!

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