Single Use Face Masks in our Oceans: Hazardous Waste - Threat to Marine Life

A report from the Scuba Divers Federation of South Australia, by Merv Brash and Kerry Cook



Single use face masks add to the hazardous waste entering our waterways and coastlines: this is an emerging problem around the world since the start of the Covid19 pandemic. Once primarily used in medical facilities and disposed of in an appropriate planned and manageable manner, masks are now a household item disposed of in general waste or cast



Credit: Unknown

aside as litter along streets, roads and beaches. Many of us have witnessed these blue face masks in our roadside gutters, supermarket parking lots and blowing on the beach shorelines in increasing numbers since 2019. According to Clean Up Australia, disposable face masks have been found to leach harmful pollutants into the environment, including plastics.

Face mask products are commonly made of polypropylene and vinyl and cannot be recycled (Wright, 2020). Over time, they break down into microplastics and nanoplastics polluting the environment and harming wildlife (Kiernan, 2021). A recent study found that after only 36 hours of weathering the breakdown of the three layers that

make up single-use masks was visible due to UV exposure and sand abrasion (Lejtenyi, 2021). This contributes to a growing concern about plastic in our environment: for example, a simple sand analysis found 16 million micro/nano plastic particles in sand samples. (Lejtenyi, 2021).

The risk to human health is under investigation but it is clear that nanoplastic particles are increasingly being consumed or ingested by humans from such varied sources as fish stocks

https://library.oapen.org/bisteam/handle/20.500.12657/28 030/1001966.pdf), sea salt

(https://pubs.acs.org/doi/pdf/10.1021/acs.est.8b04180), sea spray (https://doi.org/10.1371/journal.pone.0232746 and drinking water (S. Armbruster, 2018).

But the health of humans is not the only factor to consider from improper disposal of face masks. The increased use of protective plastic and latex gloves adds to the volume of

The impact of plastic in our environment in general is increasingly on the radar of governments around the world. The Hon. Josh Frydenberg, on World Environment Day 2021, commented that government involvement needs to be increased and noted that the "G7 discussion of plastic under "A Threat Abatement Plan" is an important process contributing to co-ordinating the issue in Australia" (Armbruster, S. 2021).

hazardous waste entering our environment and putting our marine life at risk of harm and death. Turtles ingest these items, mistaking them for jellyfish; corals can become covered

and unable to feed. And there is the equally serious problem of marine life entanglement in face mask ear loops (Kiernan, 2021), which can lead to infections and limb amputations, not to mention starvation from impeded abilities to hunt and feed, as reported by Ocean Asia (2020).

The challenge of these issues is not limited to South Australia; many are discussing these concerns as scientific research continues and reports emerge from around the world. Governments will need to begin to deal with health waste education for the general populace and address the long-term health waste

disposal with which all districts, towns, cities, states and countries must come to grips. It is estimated that



Credit: Clean up Australia

globally, 129 billion facemasks are entering landfills every month (that's 3 million a minute, according to sciencedaily.com) and it could take 450 years for that waste to break down completely (Mayers 2021, p.1; Morisio, 2021). But Covid – and the need for personal protection gear like masks and gloves -- will be with us for some time to come, making it essential to deal more directly with face mask and glove waste in our environment (Armbruster, S., 2018, and Vaid, M., Kiranmay, S., Gupta, A., 2021). University and government research facilities are taking on the challenge, including among other efforts, investigating how biodegradable materials can be used in the manufacture of medical grade single use masks (Thompson et al., 2021).

It is encouraging to see the beginnings of responses at the community level. Local councils like Port Adelaide/Enfield are publishing their own public awareness notices, asking people to dispose of their face masks thoughtfully by clipping the ear loops and putting the masks in a bin.

And what is our role as recreational divers, free divers and snorkellers in all of this? Ocean users around the world are seeing the increase of waste in our marine environment, and are learning more about the damage done to marine life and ourselves from improperly disposed of plastics and other hazardous waste. Many dive groups are currently discussing these issues and joining in community awareness raising through beach and ocean cleanup events (See for example Australia's own Tangaroa Blue Foundation; the Sea Shepherd Marine Debris Campaign; PADI's Project Aware and its Marine Debris program, to name only a few). Here in Adelaide, the Marine Life Society of SA is now working to bring Clearbot -- an autonomous boat that detects and collects marine trash – to South Australia.

While disposal of single use face masks is only one aspect of the much larger plastics problem, it is significant and will only get bigger and more harmful as time goes on. Actions by small groups like dive clubs are worthy efforts to reduce, retrieve, and report on aquatic environments that have plastic waste, including single use face masks. Small efforts, when put together can become large influential campaigns to bring awareness and solutions to everyone.

## Actions that the diving community can take

**Snip those ties and dispose of your masks in a bin.** Before tossing your masks into the bin, snip the ties just in case masks blow away during rubbish collection and end up in storm drains and waterways.

**Do your research on cloth masks:** While wearing cloth masks that can be washed and reused may seem like the environmentally friendly solution, most cloth masks will not meet the 95% filtering standard for protection from transmitting or getting Covid. Masks that filter out 95% of 0.3 micro particles are the recommended choice for mask wearing (N95 and KN95) and are not meant to be reused (although research into KN95 masks is suggesting that there may be effective ways to clean and reuse KN95 masks).

Alert the local council if you notice a significant accumulation of mask and glove litter.

### Organise and participate in beach and

ocean cleanup efforts: Gathering up waste as part of a group initiative, using guidelines from initiatives like Project Aware or Tangaroa Blue, will ensure proper collection and disposal of the waste, as well as providing evidence to local councils of any emerging waste problems. Retrieving any submerged or floating medical waste like single use face masks or protective gloves must be always carried out in a safe manner (Zhang et al., 2020) so doing it as a group initiative with guidelines is the preferred



Credit: ABC News Pip Kiernan says it is estimated to take about 450 years for a disposable mask to break down in the environment

approach. If you find mask and glove waste during a dive and feel impelled to deal with it, be sure your hands are already covered before collecting and carrying the waste back to shore in a carry bag.

### Find your voice:

**Lobby your local council for more waste disposal bins** at popular beaches, jetties and dive locations. Evidence from your beach/ocean clean up event will be

influential in advising local council of the extent of the problem.

Ask your State and Commonwealth members of parliament to support research into biodegradable materials for the manufacture of medical grade single use masks (Thompson et al., 2021).

**Become more informed!** Check out websites and organisations taking on the challenge of face mask waste in the marine environment. Dive clubs can seek out researchers and expert speakers to attend club meetings to bring about awareness which might include new data, new technologies, and new methods to collect and report on waste that is submerged or floating around dive sites.

# If you have questions about this report or are seeking additional information, please contact SDFSA Committee member Heather Petty, at info@sdfsa.net.

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Together we can have real impact on the issues affecting the South Australian diving community.

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