ALL THAT GLITTERS IS NOT GOLD - THE DARK SIDE OF GLITTER

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ABSTRACT

Glitter is in trend all over the world. However, its use has increased tremendously over the past few years. The use of Glitter in fashion and makeup industry, art and crafts, celebrations, etc. is rising every day. Glitter is a microplastic. It is usually made from a combination of aluminium and plastic. Glitter is a decorative nuisance which is getting everywhere, even into the farthest flung corners of the earth. Scientists have found evidence that glitter contains microplastics, which can find their way into rivers and oceans, taking many years to degrade. Some researchers have even called for a total ban on glitter over concerns that these particles are polluting oceans and hurting marine life. A primary intent of this article is to spread awareness in the society about the harmful effects of glitter on our environment and to provide an insight into the safer alternatives of glitter. We believe that ‘Awareness is the first step to solve a problem’. This article is designed to meet the purpose of educating the readers about the pros and cons of using plastic based glitter as well as to encourage them to make better choices by switching to eco-friendly alternatives to glitter (biodegradable glitter) in order to tackle the problem of microplastic pollution created by traditional glitter. The use of Bio-glitter is a positive step forward to save our environment.

KEYWORDS: Glitter, Microplastic, Marine life, Environment, Pollution, Biodegradable, Bio-glitter.
INTRODUCTION
Everything looks better with glitter. Glitter is in trend all over the world. However, its use has increased tremendously over the past few years. For some, glitter helps to brighten a stressful day and for others, it is just a fun thing to play around with and to bring a smile on the face. The use of Glitter in fashion and makeup industry has never been so ubiquitous and versatile. Glitter is like the magic wand of make-up that adds some sparkle to your life, helping you shine brighter than any diamond. Glitter is a must-have childhood craft ingredient now a days. Kids love glitter crafts. People love to use glitter for celebrations. However, its use is not only limited to celebrations rather it has been used for protests as well. Glitter is also used for glitter bombing, which is an act of protest in which activists throw glitter on people at public events. Some legal officials argue glitter bombing is technically assault and battery. It is possible for glitter to enter the eyes or nose and cause damage to the cornea or other soft tissues potentially irritating them or leading to infection, depending on the size of the glitter (Kurtz, 2012). Whether we love to scatter glitter on our hair, eyebrows, lips, cheeks, and even wear it in face masks, but some scientists believe glitter is so toxic that it should be banned as it is polluting oceans and hurting marine life (Gabbitiss, 2017). We may either love glitter or just hate it, but no matter which side of the fence we are on, we can't deny it - Glitter sure is pretty!

Ancient Glitter
The modern English word "glitter" comes from the Middle English word gliteren, meaning to Shine. The use of Glitter dates to prehistoric times. Prehistoric humans are believed to have used cosmetics, made of powdered hematite, a sparkling mineral. Sometime around 40,000 B.C., ancient humans began dusting sparkly crushed minerals over their cave paintings to give a glittery appearance. From 40,000 BC to 200 BC, ancient Egyptians, produced "glitter-like substances from crushed beetles" as well as finely ground green malachite crystal (Sharma, 2017). As early as the sixth century A.D., Mayans were adding glitter made of mica to their temple walls. Around 8,000 years ago people of the Americas were using powdered galena, a form of lead, to produce a bright greyish-white glittering paint used for objects of adornment (Hansford, 2008).

Modern Glitter
Glitter as we know it today wasn't invented until 1934. Modern glitter was invented by American machinist Henry Ruschmann, in 1934. Henry Ruschmann was a cattle rancher in
New Jersey. He was also a machinist. His hobby led to the accidental discovery of a process that used a machine to precisely cut plastic films into thousands of tiny pieces. All those tiny pieces of plastic eventually became the product we now call glitter. Ruschmann started a company called Meadowbrook Inventions to produce glitter in large quantities. His company is still in business today and is one of the world's largest manufacturers of glitter (Mangum, 2007). Today over 20,000 varieties of glitter are manufactured in a vast number of different colours, sizes and materials.

**What is modern Glitter made of?**

Modern Glitter is made of a microplastic, specifically a polymer called Polyethylene Terephthalate (PET), also known as Mylar. Commercial glitter ranges in size from 0.002 to 0.25 inches (0.05 to 6.35 mm) a side. First, flat multi-layered sheets are produced combining plastic, colouring, and reflective material such as aluminium, titanium dioxide, iron oxide, and bismuth oxychloride. These sheets are then cut into tiny particles of many shapes including squares, triangles, rectangles, and hexagons (Wagner, 2018).

**What are microplastics?**

Microplastics are very small pieces of plastic, typically smaller than 5 mm that pollute the environment. They accumulate in animals, including fish and shellfish, and can harm the fertility, growth and survival of marine life and other species. Small microplastic particles can be eaten by zooplankton, tiny marine animals which underpin the marine food chain and play an important role in regulating the global climate (Weaver, 2018). Humans can also consume or inhale microplastics. The impact on human health is largely unknown and the subject of continuing research. Scientists are concerned that microplastics may carry pathogens or toxic chemicals into the body.

**The Dark Side of Glitter**

It is rightly said, “All that Glitters is not Gold”. Glitter is no doubt very pretty but there is also a dark side to it. The joy of using glitter at school, birthday parties, festivals, etc. fills us with a sense of fun and nostalgia. We all love glitter. Whether it’s in our birthday card, on our face for music festivals, or all over the floor on New Year’s Eve. Although it may seem like a little diamond on top to any accessory, event, or occasion, glitter poses a threat to our oceans and marine life. Many scientists believe that glitter is terrible for the environment. The main argument boils down to the ingredient that makes up glitter microplastic, specifically a polymer called polyethylene terephthalate (PET), also known as Mylar.
Why Scientists Call For A Ban On Glitter?

Scientists call for a complete ban on GLITTER because the particles are polluting oceans and hurting marine life

- Glitter is made of a microplastic known as Mylar, which is hurting ocean life.
- This microplastic accounts for 92.4% of the 5.25 trillion pieces of plastic in the ocean.
- Marine life is mistaking glitter for food, which is damaging their livers.
- Every tiny sparkly bit takes thousands of years to break down.

Is glitter hurting Marine Life?

Some scientists are concerned about the dangers posed by the sparkles used in children’s crafts and some cosmetics. Most glitter products are made from plastic, which is a huge problem for marine life. When glitter is washed down the drain or drifts into a landfill, it can become a microplastic pollutant. These small pieces of plastic are not always caught by water filters, so they seep into oceans, lakes and rivers and are consumed by plankton, fish, and birds, thereby have a detrimental impact on the marine life. Animals die from starvation when microplastics collect in their systems, and the material can even make its way up the food chain to end up on our plates. A UN report in January 2017 found that microplastics make it back onto our plate, infiltrating the tissues of the fish we buy at the supermarket. And the plastic itself isn't even the whole problem—when plastic sits in the ocean, it's "a sponge for chemicals already out there," as quoted by marine ecologist Chelsea Rochman in 2013. The toxic chemicals in our waterways make it up the food chain on the backs of those glittery microplastic. A study published in the journal Geochemical Perspectives, found that microplastics have even reached the deepest point of the ocean, Challenger Deep, in the western Pacific Ocean's Mariana Trench. Trisia Farrelly, an environmental anthropologist at Massey University, told the Independent in 2017 that all glitter should be banned as it's microplastic. In her research, Farrelly found that polyethylene terephthalate (PET), the plastic most glitter is made from, can break down and release chemicals that can disrupt human and animal hormones. Furthermore, plastic glitter takes about one thousand years to biodegrade, according to Victoria Miller, a materials and engineering scientist at North Carolina State University (Gabbatiss, 2017).
BAN ON GLITTER

Glitter makes everything sparkle. Like many of its plastic counterparts - plastic bags, straws and microbeads - glitter is under the radar for its effect on the environment. Scientists believe glitter is just as harmful as banned microbeads and is destroying our environment.

Dr. Sherri Mason is well known for her research on the effects of microplastics in freshwater systems. Part of her research focused on microbeads; small plastic balls commonly found in face wash. Her findings helped to ban the use of microbeads in USA (Weaver, 2018). The Microbead-Free Waters Act of 2015 prohibits the manufacturing, packaging, and distribution of rinse-off cosmetics containing plastic microbeads in USA.

Several other countries have also banned microbeads from rinse-off cosmetics, including Canada, France, India, New Zealand, Sweden, Taiwan and the United Kingdom. According to Rebecca Richards, the founder of eco-friendly glitter company BioGlitz, glitter is essentially a flattened microbead, a material banned in the U.S. in 2015 for its detrimental effects to the environment. However, glitter was able to fly under the radar of this ban and it is still used today in countless products. Like the outlawed microbeads, glitter is considered a microplastic, which poses a very real threat to environment.

In January 2019 California became the first state in USA to ban plastic straws from restaurants. It has been estimated that nearly 8.3 billion plastic straws pollute the oceans around the world. Given the attention that’s been brought to how plastic straws pollute the oceans, it’s not surprising scientists are urging to look at the use of glitter as well. 38 Degrees, a campaign group in UK, has launched a petition for the complete ban of plastic glitter and luster from the UK. About 61 British music festivals have already signed up to ban single-use plastics, including glitter by 2021. Some brands and companies have promised to replace glitter in the past couple of years. In 2018, dozens of British music festivals banned attendees from wearing glitter, and cosmetics brand Lush replaced glitter in bath products with biodegradable substitutes. Some supermarkets like Waitrose and Aldi have also committed to remove glitter from their products. A Scottish primary school has become the first in the UK to ditch controversial plastic glitter in favor of an eco-friendlier biodegradable alternative. Pupils from Logan primary school, in East Ayrshire, are now using plant-based Craft Bio-glitter, which degrades in around four weeks, in all its art and craft lessons. Almost a quarter of nurseries across UK have promised to ban glitter from classrooms over environmental concerns. In 2017, Tops Day Nurseries, a British childcare provider, banned
its 2,500 children from using glitter, with experts warning that, as it’s so hard to tidy up all those tiny pieces, they are likely to end up in the environment. Dozens of Nurseries in UK have made a pledge to become more environmentally friendly. Several British retailers including Morrisons, Waitrose and John Lewis removed glitter from their Christmas ranges to cut down on microplastics last festive season (Street, 2018).

The US and UK have taken steps towards banning glitter, by outlawing cosmetics and care products containing microbeads. The move is aimed at protecting the marine environment from one source of plastic pollution, as microbeads are washed down the drain and can enter the seas and be swallowed by fish and crustaceans with potentially harmful effects. And now they are calling a ban on glitter for similar reasons. Glitter is made from tiny pieces of plastic making it as bad for the environment as the toxic microbeads. There is already a partial ban on glitter in place in the United States, Canada placed a ban on microbeads in 2018, and the United Kingdom’s ban took place in 2019. Though this is a step forward in the right direction, scientists believe there is still that needs to be done.

**Biodegradable Glitter**

Though glitter looks pretty but it is also destroying our environment. Glitter fans need not fear though, there are plenty of environmentally friendly brands of glitter, which are biodegradable, so a glitter ban doesn’t mean we’ll all sparkle less. Biodegradable glitter is the way forward to shine and sparkle in an environmentally friendly manner. Now, if you’re a real fanatic of glitter and can’t imagine the sparkle being removed from your life forever, all is not lost. Thankfully, there are companies who are working to give us all the best of both worlds filled with a healthy environment and all the sparkle. Products like *Bio Glitz*, which has a “unique biodegradable formula” for their glitter is safe for the oceans, and *Eco Glitter* has over 50 shades of biodegradable glitter to choose from. We have no idea what long term effects micro-plastic will have on us, our children or the other animals and plants that share our planet. It’s more important now than ever that we’re choosing products that are safe for the environment. Switching to a biodegradable glitter allows us to keep the fun in our life and do our part to save our environment too.

**Ways to Sparkle Safely**

As parents, we have a love/hate relationship with glitter. We can’t deny that the sparkle makes life a little brighter and no doubt that kids love it too. It’s a must-have childhood craft ingredient, but it’s messy too. Once we break the glitter out, it’s impossible to clean it all up,
and it is pretty much guaranteed to see it sparkle for the next month all over the house. So, how can we and our children enjoy the sparkly stuff without harming ourselves or the environment?

Below we’ve compiled a list of other options or brands to consider so you can sparkle safely!

1. Glitter is often used as confetti for parties and occasions, and one way to get around this is by making your own out of recycled or natural materials! Simply buy a hole puncher with a design on it, such as a star or heart, and punch out your confetti shapes from some of your old newspapers/magazines or leaves on the ground!

2. Synthetic mica is another option. It is made from a substance called Fluor phlogopite. Cosmetics company Lush uses this instead of plastic or natural mica.

3. Today Glitter makes their glitter out of plant cellulose, derived from sustainably farmed eucalyptus trees! Making their glitter completely bio-degradable!

4. Eco Stardust is another eco-glitter company that’s harvesting the powers of plant cellulose from eucalyptus trees to make biodegradable glitter!

5. Online fashion giant Asos also sells glitter made from eucalyptus trees.

6. Eco Glitter Fun & Bio Glitz are other certified Bio- Glitter companies to keep your eye out for in order to sparkle safely!

Dangers Caused By Glitter That Impact Our Health and the Environment

Glitter, long a craze of children’s arts and crafts, is now a trend for adults. We can scatter it on our hair, use it on our face, nails, and even wear it in a face mask. We all love to sparkle and might think it to be a harmless fun. However, experts say glitter is far from harmless: it may be polluting the environment, harming our eyes and skin and causing problems around the world (Wetzel, 2020). It is high time for us to realize that our glittery make up, eye shadows, crafts, and trendy highlighter is killing the environment. We all know that it is so hard to get rid of glitter once you sprinkle it on your body or in your environment. Many scientists are convinced it’s time for urgent action. Following are some of the dangers posed by the glitter on our health and the environment:

Plastic Pollution

- Glitter particles either end up in landfill or washed down our drains into rivers and seas. There, the particles can absorb chemicals and pollutants, making them even more toxic. Moreover, every tiny sparkly bit will take thousands of years to break down.
Balwan et al. 

Like other microplastics, glitter may be consumed by plankton, which are eaten by fish, meaning they enter the food chain and could end up back on our dinner plate. There’s no way to keep glitter out of the food we eat (Wetzel, 2020).

Alarming levels of microplastic contamination have also been found in tap water.

Airborne Menace

Frank Kelly, a professor of environmental health at King’s College London, fears we are inhaling microparticles including glitter. He warns that microparticles could deliver chemicals to the lower parts of our lungs and maybe even into our bloodstream. This could be just as damaging as inhaling car fumes, he adds and, when it comes to glitter, children and young people are most likely to be affected.

Non-Recyclable

Glitter can’t be recycled. It is made from tiny pieces of plastic. These pieces can’t be recycled because it’s difficult to break them down into component parts. They’re also so small that they clog the machinery used for waste recycling.

Damage Skin

- The plastic present in glitter masks can cause skin damage, the exact opposite of what a mask is intended to do.
- Glitter as a skin-care ingredient causes irritation, especially in those with sensitive skin. The material can be abrasive, feeling rough on the skin.

Damage Eyesight

- While glitter can add a sparkle to our skin, it really shouldn’t get anywhere near our eyes. These tiny flecks can have incredibly sharp edges and cause injury to our eye.

What happens if we get glitter in our Eyes?

Glitter is a fun, sparkly ingredient of many arts and crafts projects, but do we know that if a stray flake of glitter gets in our eye, it can injure the eye?

What can glitter do to my Eye?

Even though each piece of glitter is tiny, it is still made of a tough, abrasive material, like plastic or even aluminium. Also, each piece has potentially sharp edges. A piece of glitter in your eye could scratch your cornea. A corneal abrasion is one of the most common eye
injuries, causing pain, bloodshot eyes, extreme sensitivity to light, and the sensation that something is in your eye, even if nothing is there. If an abrasion is not treated, it could become infected and turn into a corneal ulcer. Symptoms of a corneal ulcer are like a corneal abrasion, but also include eye discharge and mild to severe vision loss.

**How do i get glitter out of my eye?**
If you do find a piece of glitter in your eye, don’t try to remove it with your fingers or something like a cotton swab. Doing so will likely just cause it to rub against the cornea and cause the very injury you’re trying to avoid. Instead, use a sterile eye wash solution or artificial tears to irrigate the eye. If the piece of glitter is on your eyelid, use a cotton swab or piece of tissue to try gently brushing it away. If your child is the one with glitter in their eye, keep a close watch on them to make sure they don’t rub their eye. Follow the same steps above to clean their eye.

**Do i need to see a doctor?**
If you continue to have eye pain or blurred vision that is not resolved after attempting to flush the glitter from the eye, make an appointment to see an eye doctor or go to urgent care.

**CONCLUSION**
Glitter is the biggest fashion trend now a days. Glitter craze is growing than ever before. Considering how difficult it is to clean glitter up in a home after using it for arts and crafts, it may not be a surprise of the mess it can make in our oceans. It is imperative for us to realize that glitter litter is damaging our rivers, oceans, wildlife, and environment. It is also a potential threat to our health. It’s more important now than ever that we’re choosing products that are safe for the environment. Although we shared a few options including biodegradable glitter, we highly encourage you to get creative or search for other eco-conscious brands out there. Make sure to do some research when purchasing glitters that market themselves as “eco-friendly”, since some companies claim this while still mixing in plastic glitter with biodegradable glitter. Also, be aware of “hidden” glitters in some of your products like body wash or makeups. In this article, we have tried to highlight the harmful effects of glitter on our environment, health, and marine life. We hope that our future generation will be more conscientious about their impact on the environment. We welcome support from parents and families to promote the use of bio-glitter over plastic-glitter. We believe that switching to biodegradable glitter is a safer and smarter choice which will benefit not only us, our
children, but our environment too. Let’s take a positive step forward to save our beautiful Planet. Let’s learn to sparkle in a safer and eco-friendly way!

REFERENCES