



MICROPLASTICS IN SALT



ZOUTMAN



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1. DEFINITION OF MICROPLASTICS

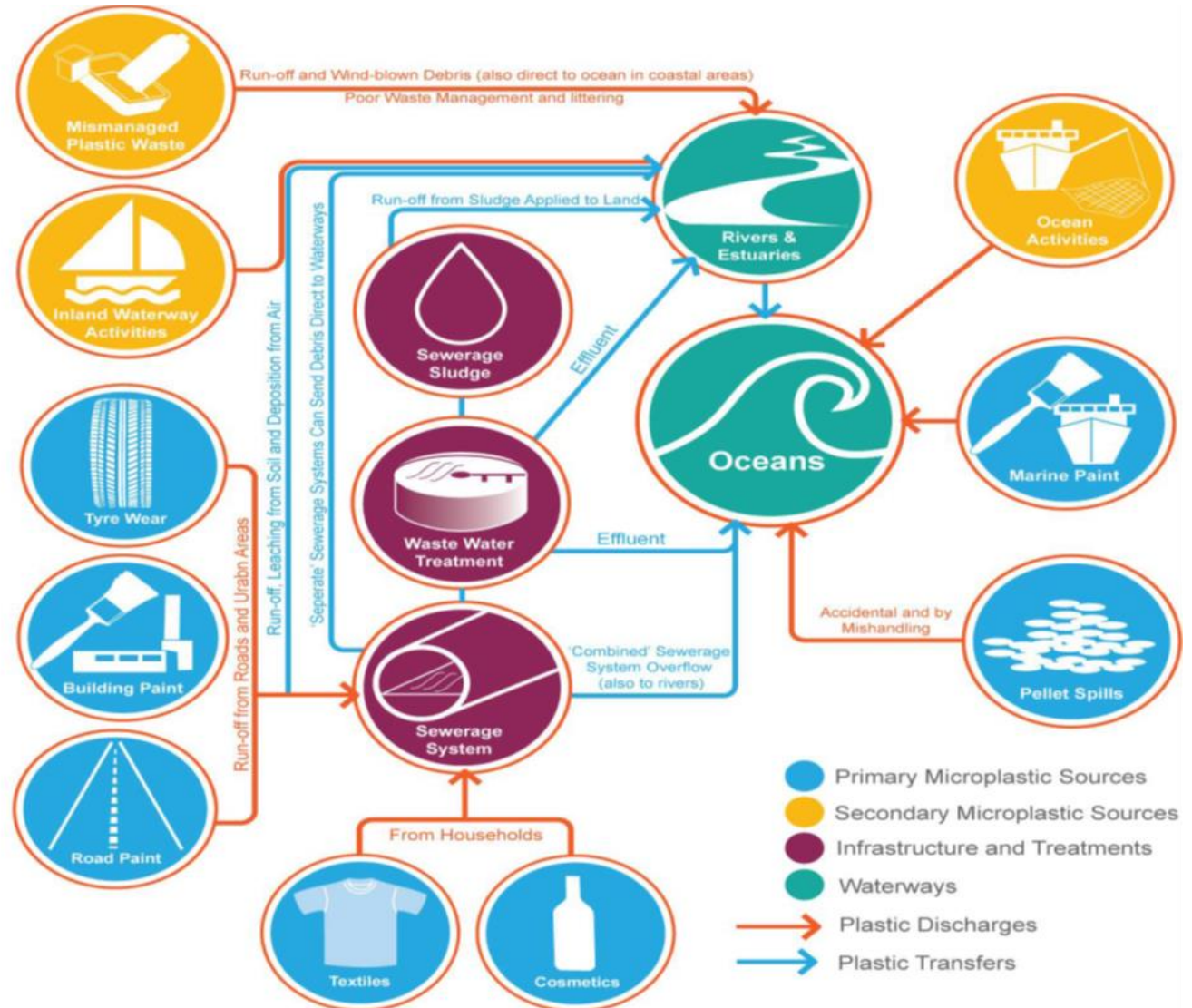
- Microplastics (MPs): small plastic particles < 5mm.
 - MPs mainly consist of (synthetic) fibres, polyethylene film or granules.
 - Primary MPs: deliberately manufactured as such small particles.
 - Secondary MPs: fragments derived from breakdown of larger plastic debris.
- Origin of MPs: general massive overconsumption, use and disposal of plastics in the environment.



2. PRESENCE

Microplastics (MPs) are ubiquitous, in the air, the soil, the rivers, the sea and are present in many food- and non food products.

There is indeed a lot of plastic in the seas and oceans, which could potentially link MPs to sea salt. > 95 % of plastic pollution is on the bottom of the ocean



3. GENERAL FINDINGS

- Origin of MPs: general massive overconsumption, use and disposal of plastics in the environment.
- Main sources of MPs:
 - Tire abrasion particles (>15 % of all MPs),
 - Washing and drying machines (> 10 % of all MPs come from clothing fibers),
 - Plastic pellets, paint, microbeads in beauty products, ...
- MPs are most easy to measure and visible in water based products. This is one of the main reasons why the current focus is on water based MPs pollution.
- As sea salt is derived from salty seawater, biased concerns about pollution by MPs are being spread.



3. GENERAL FINDINGS

- Presence of MPs in consumer products are due to the packaging of the product, the production process and internal transportation systems (> 50 % of MPs in a consumer product originate from these factors).
- Method of sampling and analysis on products are also a potential source of MPs (how the sample is taken and stored – for example: the plastic cap of a sample jar can be a source of MPs as well).
- MPs are found in all possible (packed) products such as tea, bottled water, tap water, sugar, honey, beer...
- The WHO (World Health Organization) declared that the presence of MPs in bottled water is currently not a health concern (although this water is ingested directly).



4. STUDY ON MICROPLASTICS IN (SEA) SALT

- When the first article about MPs in Chinese salt appeared (December 2015), ZOUTMAN immediately decided to take action on this topic because quality is a top priority.
- Different samples of the raw material, refined sea salt and packed refined sea salt of ZOUTMAN were analyzed on the presence of MPs by a governmental laboratory specialized in this matter (ILVO).
- Results:
 - There was a very small amount of MPs in the raw material, but after the refining process the content of MPs was 0. In the production process, the raw material is double washed, airdried and sieved, dedusted and optically cleaned. These process steps are definitely efficient to remove all possible MPs from the raw material.
 - Results also showed that there is a difference between the type of packaging which is used. The salt packed in plastic packaging contained a small amount of MPs, while the salt packed in carton contained none.



4. STUDY ON MPS BY THE FEDERAL PUBLIC HEALTH SERVICE

- In December 2016, the Belgian federal public health service launched a new study. They investigated the presence of MPs in consumer salt products, which were sold on the Belgian market. Consumer samples of ZOUTMAN product were also investigated.
- Results:
 - The presence of MPs in salt was not only linked to sea salt but also to vacuum salt (PDV) and rock salt.
 - ZOUTMAN products had the best overall scores.
 - The report also showed that salt sourced from Australia and the Caribbean Sea had the lowest MPs rate. This is where ZOUTMAN sources the raw material.
 - There was also a big difference between traditionally harvested (without any further process steps) and industrially harvested, processed sea salt. The amount of MPs in traditionally harvested sea salt was up to 10 times more than the amount in industrially processed sea salt.



5. HAZARDS

- No studies or results show the hazards of MPs.
According to first test studies, 99,5 % of ingested MPs (> 0,150 mm) are defecated.
- EFSA noted that the presence of MPs in food was an emerging issue. It proposed further studies on the occurrence of MPs in food, their impact on the gastrointestinal tract and their toxicity.
- The authority's expert panel said that it is too early to say whether the particles are harmful to consumers.



6. QUANTIFICATION OF MPS IN DIFFERENT PRODUCTS

- According to studies, industrially processed and packed salt can contain 0 to 18 particles per kg of salt. Annual total consumption of salt (+- 2,9 kg) can potentially contain 52 particles. Since only +- 25 % of this volume is added to meals, the number of particles directly ingested drop to potentially 13 on an annual basis.
- Bottled water can contain up to 1.000 MPs per liter. Annual consumption of 300 liters of bottled water can potentially lead to the digestion of 300.000 particles.
- A portion of tea in a plastic bag can contain up to > 1 million particles. Annual consumption of 100 portions of tea can potentially lead to the intake of more than 100 million particles.
- By eating clams, the intake of MPs can be up to 11.000 particles per year.
- A recent study showed that the sum of only 16 consumer products could potentially lead to the consumption of +- 50.000 MPs.
- Studies found that melted snow in Europe contains up to 26.400 particles per liter.
- A study showed that 1 kg of sediment in a (Belgian) river contains up to 50.000 MPs.
- 1 day of washing and drying of clothes in a city like Berlin is equivalent to 500.000 plastic bags (= billions of microplastics).



7. CONCLUSIONS

- **Potential quantity of MPs in salt is not at all relevant in comparison to other products:**
 - MPs are everywhere (air, soil, river, sea, tap water,...) and are a result of massive overconsumption and disposal of plastics and not inherent to the raw materials in which they are found.
 - MPs are not native to salt or sea salt, but occur in all kinds of food- and non food products (sugar, flower, water, beer, honey, toothpaste, powders, clothes, ...). Salt was initially targeted since it is a very easy product to analyze.
 - Industrially harvested and processed (sea) salts contain none or many times fewer MPs than traditionally harvested and unprocessed (sea) salts. In food use, 98 % of the salt has been processed.
 - Not all oceans or seas contain the same amount of plastics (the MPs level in the Mediterranean Sea is much higher than the Caribbean Sea – Australian coast).
 - The potential amount of MPs in food is strongly influenced by the method of processing and the type of packaging (plastic vs carton).



6. CONCLUSIONS

- There are currently no regulations or guidelines on the 'tolerated amount' of MPs in food in general.
- There is no proof (yet) that MPs are harmful to the human body.
- The salt of ZOUTMAN had the best scores according to 2 independent studies by the Belgian Federal Public Services (none to a minimal amount of MPs).
- ZOUTMAN actively works on the process to minimize and exclude presence of MPs in its products. For consumer packaging, ZOUTMAN advises to use carton packaging (carton shakers) instead of plastic packaging.
- The so-called presence of MPs in salt is minimal and totally irrelevant to other sources of MPs pollution. Salt is consumed in very small amounts (only 25% of the daily salt intake is directly added to meals) and is in most cases not directly ingested (since it is mostly used to cook, bake or sprinkle on food products).



8. PRODUCTION MEASURES ZOUTMAN

- The raw material is sourced in areas with almost 0 industrial activity (and mainly protected nature areas)
- The salt is first washed in a brine bath, by which all floating particles with a density lower than 1,2kg/l are removed from the sea salt.
- The salt is then washed for a second time on a vacuum belt washer. Through the 0,8 mm mesh belt, small salt particles and possible impurities (clay, sand, coral) are removed.
- After the double washing process, the salt is heated in a fluid bed dryer, where all particles smaller than 0,2 mm are extracted from the sea salt through wind sifting.
- During the refining process as a whole, occurring salt dust is removed constantly, by which all sorts of microscopic foreign particles are withdrawn.

