

## REPORT



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**NEN Milieu & Maatschappij**

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**SUBJECT**

Report Event Standards & Innovation: "Research, innovation and standardization: a golden combination – Theme table: microplastics in water"

### Participants

<b>Organisation</b>
KWR Watercycle Research Institute
Plastic Soup Foundation
KWR
Rathenau Instituut
NIOZ Royal Netherlands Institute for Sea Research
Enmalo Engineering Maintenance Logistics
Climate - KIC
Het Water Laboratorium
RWS-WVL department waste and circular
NEN
NEN
NEN

### Introduction:

On Tuesday June 25<sup>th</sup> of 2019 the event 'Standards & Innovation: 'Research, innovation and standardization: a golden combination' took place at The Green Village at the TU Delft Campus. This event was organized as a collaboration between NEN, RVO, Climate-KIC and Octrooicentrum Nederland.

In the afternoon there were several round table discussions, one of these was the round table discussion on 'microplastics in water'. The discussion lasted one hour and was guided with the use of a special canvas with the following questions.

### 1 Table inspirator presents her vision on the case

We started our discussion with a short presentation by KWR on the problems surrounding microplastics in water:

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### Current global focus:

- Contrary to climate change, there is public consensus on the problem of microplastics in water. We can use this to our advantage.
- The global production of plastics is still increasing, as it has since the 'disposable society' was introduced in the 1950's.
- It is clear that the focus regarding microplastics in water is changing from microplastics in marine environments (sea) to microplastics in rivers, lakes, streams and microplastics at shores.  
Microplastics in water have many resources, so the solutions have to be diverse as well.
- Also the public awareness and mindset regarding plastics is changing, a lot of countries prohibit the use of single use plastics like plastic bags, straws, plates etc.

### Research, analysis, characterization and risk assesment:

But before we can solve the problem, we need to know what we are talking about:

- Clear definitions on what microplastics are, are needed:  
What characterizes a microplastic? Its size (<5mm – nanoplastic??), its type, its mass, is it soluble, its colour, additives, chemicals, harmful effects on environmental and human health, its presence of potentially harmful microbes?
- We need to improve the quality of the research on microplastics.
- We need to asses the health risks and effects better. If we can count the amount of microplastics and can calculate the exposure to microplastics, it is easier to define the risks.
- There is a relationship between environmental health and human health. We are dependent on the environment for our food. Even if there is not an effect on human health, there is an effect on the environment which in the end affect sus as well.

## **2 What are the problems regarding Microplastics in Water and how do we prioritize these problems?**

- Quality of measurement: Blank's need to be qualified, nowadays microplastics are everywhere and are also found in blanks. Not every laboratory has a clean room.
- Omnipresence, microplastics can be found everywhere in the environment: (Micro)plastics can be buoyant and float in the water, some microplastics sink and stay in the sediment, other microplastics are airborne.

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- Our dependency on plastics: living in a 100% plastic free world is not possible.
- Urgency: we need more public awareness to fund innovation and research.

### 3 What are potential directions for solutions to the problem (i.e. standardization)?

- Risk assessment: what are the real risks of microplastics in water for the environment and for human health and what are the perceived risks? These effects are not clear yet and need further research.
- We need waste disposal regulations and enhancement to prevent plastics from entering the environment.
- We need filters at the waste water treatment plants.
- We need [barriers](#) at the border of rivers and seas.
- We need to involve all stakeholders from the plastics chain, from designers, producers, retailers to consumers.

### 4 What are first steps or actions that can contribute to the solution of the problem?

#### Monitoring the problem

- Standards for sampling, measurement and analysis;
- Standards on definitions of microplastics;
- Life cycle assessment, what do microplastics do in the environment;
- What and where do the [major sources](#) of microplastics come from?
- What is the ratio between primary and secondary microplastics?
- Environmental and human health: Develop a [health](#) and risk assessment for microplastic in water;

#### Removal of microplastics

- Filters in washing machines to catch microplastics from clothes ([microfibers](#) from fleece, polyester etc);
- Systems to catch run-off from car tires;
- Filters at waste water treatment plants;
- Filters at drinking water treatment plants;
- Plastic eating microbes are not a viable solution!

#### Prevention

- Abolish all single use plastics
- Focus on the use of 'old materials' such as glass, wood, metal etc.;
- Promote a plastics and waste free life style;
- Produce only recycleable plastics;

#### Responsibility and awareness:

- Identify all stakeholders;
- Get all stakeholders to sign a MoU ([Memorandum Of Understanding](#))
- Get the plastics industry on board, and since they seem to not be willing to cooperate, we might need some negative pressure;

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- Develop ([European](#)) legislation for the plastics industry to which they need to comply, the revenues can be used for research and standards;
- Asian countries should refuse to accept waste from Western countries, so we have to deal with our own waste;
- Communication campaign to raise public awareness, only 10% of the public know about the problem and know they have a part in the solution as well;
- [Education campaign](#) at primary and secondary schools, start with our youth;
- Plastic Foot Print <https://www.plasticsoupfoundation.org/psf-in-actie/my-little-plastic-footprint/>

### **Bonus:**

- Organize a challenge based event for early stage start ups to come up with solutions for this problem. Let them come up with small, tangible projects. Involve innovators and cities.



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Photographs from our table:

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**3 WHAT ARE THE PROBLEMS REGARDING MICROPLASTICS IN WATER AND HOW DO WE PRIORITIZE THESE PROBLEMS?**

Note the 3 most important ones.

1. Quality of measurements  
CHALLENGE OF QUANTIFYING PLASTIC  
Waste disposal regulations
2. OMNIPRESENCE *zinks/dingjes*  
— urgency *gevoel tot noodzaak*
3. DEPENDENCY ON PLASTIC  
Responsibility of industry  
— Risk assessment  
Sources *Wants de belangrijste*

10 MIN.

**4 WHAT ARE POTENTIAL DIRECTIONS FOR SOLUTIONS TO THE PROBLEM (I.E. NORMALIZATION)?**

- LEGISLATION -> EUROPEAN ~~EXERCISE~~ GUIDELINES
- NORM OF - MEASUREMENTS - CHEMICALS / ADDITIVES
  - SAMPLING
  - DEFINITIONS (Size)
- SUPPLY CHAIN ENGAGEMENT / EXTENDED PRODUCER RESPONSIBILITY
- PROFICIENCY TESTS [INTERLAB]
- PUBLIC AWARENESS
- PREVENTION
- MORE RESEARCH (MICROMES)
- ENFORCEMENT / HANDHAVING

10 MIN.

**5 WHAT ARE FIRST STEPS OR ACTIONS THAT CAN CONTRIBUTE TO THE SOLUTION OF THE PROBLEM?**

1. Washing machine filters
2. Identify stakeholders
3. Kick off event m.o.u.
4. Standardization of measurement methods & sampling.
5. Communication / campaign (RWS)
6. LCA / Research *Plastic Soup foundation*
7. Tackle own waste (eu)
8. Ban all plastics.
9. Communication
10. Challenge based events for innovators.
11. Plastic foot print -> standardization.
- 12.

10 MIN.

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