Background

This presentation presents key points made during a discussion with a member of the JRC. It is NOT a JRC presentation.

JRC has been very supportive of the NSP in the past but was not able to directly participate at this time.

Douglas Gilliland met with us for over an hour to provide some thoughts to share with this workshop

JRC and Standards

JRC is very active in supporting the development of standards generally and including nanotechnology participating in groups such as:

- ISO, CEN, VAMAS
- DIN, AFNOR
- OECD
- CUSP – EU funded program investigating relationships between micro/nanoplastics and human health (https://cusp-research.eu/)

Some concerns

- NP research has relied too much on “nanoplastics” from lab supply houses and not enough on actual nanoplastics
- The terminology used to describe “nanoplastics” is not always used is a precise way leading to research inconsistencies
- It’s very difficult to obtain quality samples of micro/nanoplastics (1MT of macroplastic used to generate ~0.1 g MP/NP)

Actions

- JRC is working with NIST on methods to produce more realistic test materials for microplastic and nanoplastics research
- JRC is focused on support for MP due to legislative requirements, but the work likely supports NP's, too.

Standards Needs

- Terminology - Legislation requires precise unambiguous definition of terms such as microplastics and nanoplastics but currently there are no universally applicable or accepted definitions. To address this problem in EU legislation, appropriate definitions and terminology may have to be included into the specific legal acts. (e.g http://data.europa.eu/eli/reg/2023/2055/oj)
- Metrology – The shapes of particles of MP/NP may be even more important than for nanomaterials generally.
- For micro size range shape may be relevant as distinguishing fibers from particles and fragments may help in understanding the origin of the materials (textiles, fragments and manufactured particles).

Standards Needs (con't)

- Metrology/Terminology - Many plastics (including MP/NP) are formulations/mixtures. How does this impact properties that standards consider?
- Metrology – MP/NP rapidly aggregate and this affects characterization
- Need a better understanding of what existing nanotech standards may apply to MP/NP

Standards Needs (con't)

- EHS – MP/NP biodegrade differently than macroplastics. This may mean that generally used biodegradation methods may need modifications.
- EHS – When MP/NP degrade and release additives, how can the impacts of additives be considered?
- SRM – Standardized reference materials are needed for MP/NP

Standards Needs (con't)

- EHS – Methods to extract MP/NP from complex matrices
- Metrology – FFF is used for NM. Also OK for NP?
- Terminology – Rubber tires are an important source of small plastic-like particulates but being an elastomer can they be categorized as microplastics?
- Metrology/EHS – In addition to standardized methods there is a need for economical methods/equipment

Standards Needs (con't)

Terminology/EHS – In some laws/legislation, natural and synthetic materials are considered differently. Natural is often favored. Is this appropriate?

Final Thoughts

JRC will continue to be active in the development of standards for micro and nanoplastics

JRC will be interested in learning what is discussed, and the next steps determined during this meeting