

Break-out group discussion themes:

- Extraction procedure
- NER type separation
- Remobilization testing

Extraction procedure

- Efficient **standard*** extraction *or* substance specific optimized extraction?
 - Aim is to extract most of the parent → specific and optimum solvent/mixture should be used, covering a full range of polarity; US-EPA approach: three fix categories, each containing polar and unpolar solvents
 - Method development for optimal extraction method is always part of what regulatory authorities ask for
 - Standard extraction (BfG approach) as an initial trial for new substances to get an idea
- Which level of harshness should be applied for the extraction method to obtain NER containing matrix?
 - harsh extraction should always be performed for persistence assessment, but only as a last step of a sequential extraction (polar → unpolar)
 - Supercritical fluid extraction (SFE) appropriate? → Equipment in many labs not available

***Standard extraction: PLE, methanol:acetone:water 50:25:25**

NER type fractionation (I + II versus III)

- Comparison of EDTA and silylation method
 - Sodiumhexametaphosphate, $\text{Na}_6[(\text{PO}_3)_6]$, as an efficient extraction alternative; similar to EDTA this treatment will extract biogenic residues
 - Silylation for NER analysis only at elevated application rates? → depends on specific radioactivity and on the amount of NER formed, but often slightly higher concentrations are used compared to recommended dose → no additional series of incubations at higher rates necessary
 - Do NER change in the course of incubation? Some indication that distribution of type I NER and type II NER may change over time
 - Analysis of silylation extracts: easily applicable (CHCl_3 extract) but pre-tests with the parent compounds have to be performed in terms of stability, but this is also true for any extraction method

NER remobilization

- Physical, chemical, biological methods suitable?
 - From an regulatory perspective it seems difficult to test this by the different approaches → seems not in focus of interest
 - Water is the only real solvent in nature → heavy rainfall should be tested, maybe hot water → however, solubilizing ingredients, biosurfactants, should be tested as well
 - Released residues (from type 1 NER) become bioavailable, but may be rapidly degraded