Submission ID: 36519

EXQ1 Q1.9.6

Potential Effects of XLPE Cables on Soil & Water Aquifers

It is very clear from the application that there is going to be a significant amount of cabling buried across the site. The applicant has only proposed to remove surface-based material at the point of decommissioning. This will leave a huge amount of contamination underground. XLPE cabling has many potential contaminants, and this should not remain in the ground above a primary aquifer. We understand the applicants desire to only remove surfaced based material, this is cost calculation. It is the planning inspectorate's responsibility to ensure the applicant is not permitted to leave contamination below ground. No matter what the costs, it is the responsibility of the applicant to return this land to its previous state by removing all contamination even materials that were buried. What are the risks?

Leaching of Additives or Degradation

XLPE contains not only polyethylene but also additives like antioxidants, cross-linking agents (e.g., peroxides), and sometimes flame retardants. If XLPE cables degrade due to aging, heat, or environmental conditions, small amounts of by-products or additives leach into the soil.

Physical Intrusion and Disturbance

Cable laying will disturb soil layers, changing natural water flow paths and increasing turbidity or altering recharge rates to aquifers. In large-scale installations, cables may act as physical barriers to water flow, modifying hydrology.

What standards are being implemented to ensure there is zero impact on the aquifer? Are any of the following actions being taken? Protective measures such as bentonite layers, encasement, or double sheathing to prevent leaching or intrusion.

There has been a concerted effort to remove microplastics from rivers and oceans. Why do EDF feel it is acceptable to pollute the land with microplastics from XLPE?

How Microplastics Form

- Underground cables degrade slowly due to oxidation, hydrolysis, and mechanical stress.
- As the outer sheath degrades, it can flake or fragment.
- Particles leach into soil or aquatic systems if exposed.
- In high-voltage conditions, water treeing weakens the polymer matrix, leading to internal cracking.
- Cutting, stripping, or mishandling cables during installation or recycling can release particles.
- Improper disposal or abandonment of cables increases the risk of long-term environmental fragmentation.

A 2021 review on plastic infrastructure noted that polyethylene-based cables and pipes are long-term contributors to soil microplastic pollution, especially if not properly disposed of.

Mitigation Measures

1. Use of ducts or concrete encasement to prevent direct soil contact.
2. Laying impermeable barriers (like clay liners) to stop contaminant transport.
3. Installation of groundwater monitoring points to detect any changes post-installation.
4. Ensuring old or damaged XLPE cables are not left in-situ where degradation could occur.