

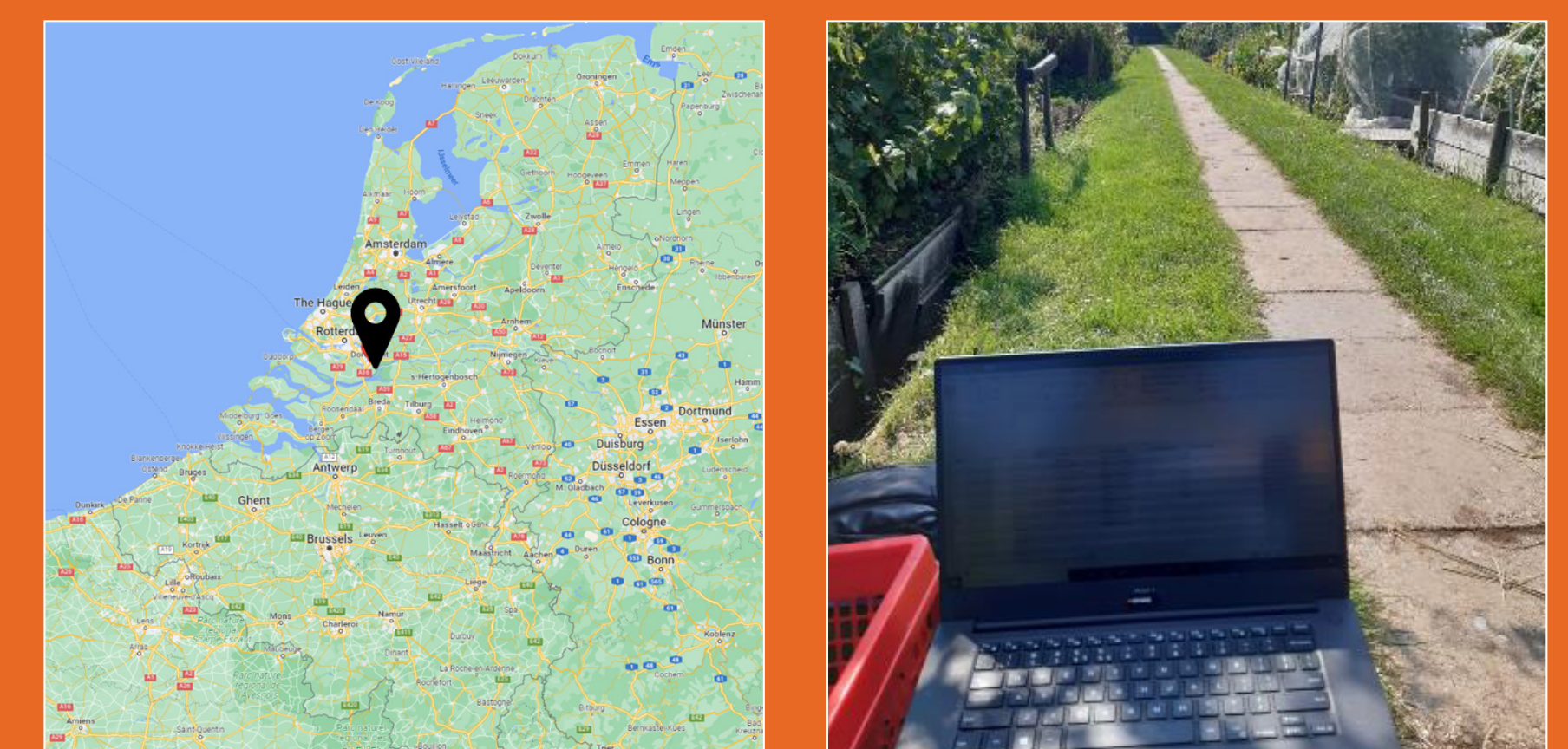
PFAS in crops near a fluorochemical plant

Links between distance, soil concentrations and uptake

Tessa Pancras – Arcadis Nederland B.V.

Introduction:

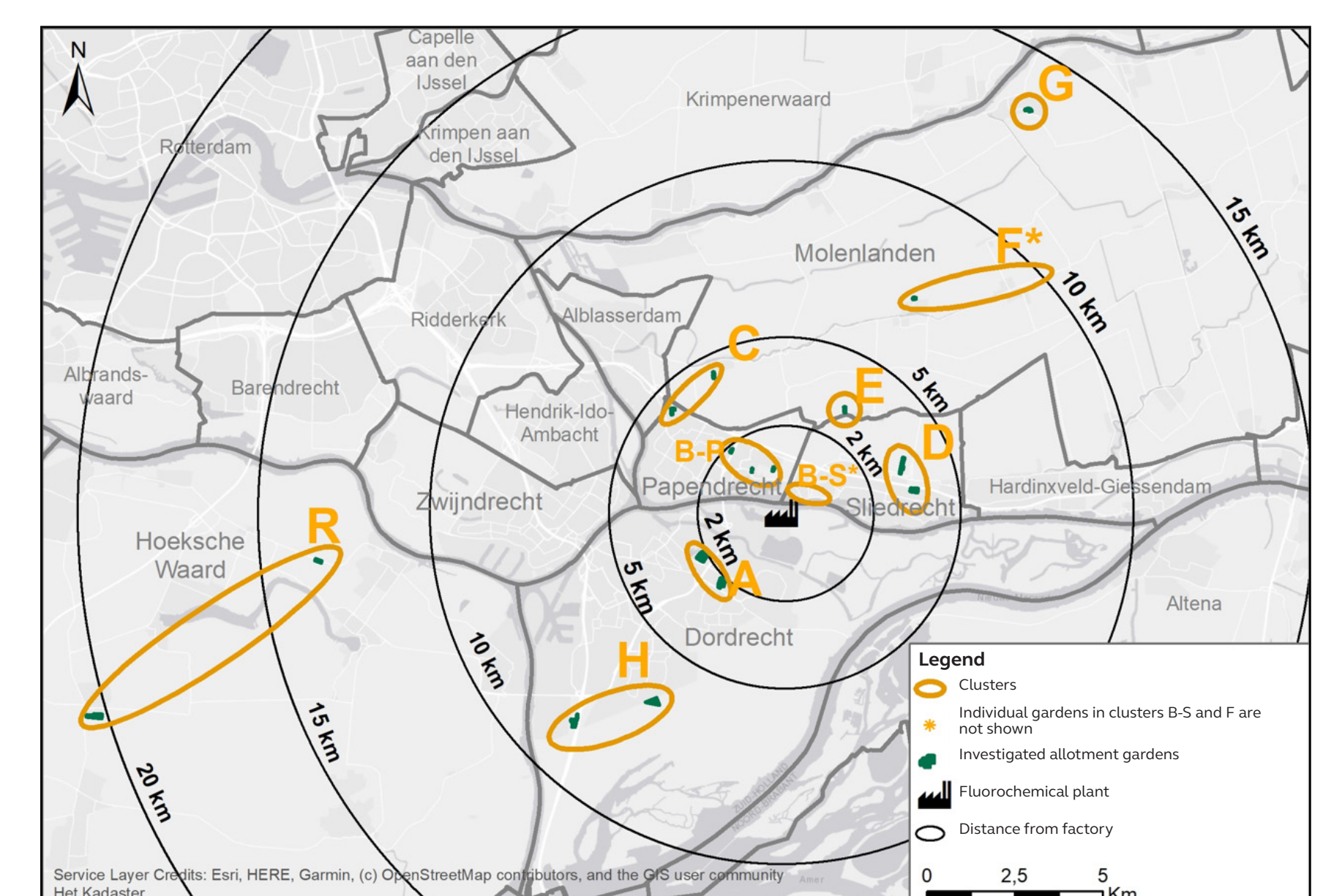
In Dordrecht, the Netherlands, a fluorochemical production plant has been emitting PFAS (mainly PFOA) into the air and surface waters for decades. The risks for vegetable gardens users downwind of the factory were determined 5 years ago and had to be reassessed based on the new EFSA TDI for PFAS.



Method:

A new investigation was carried out:

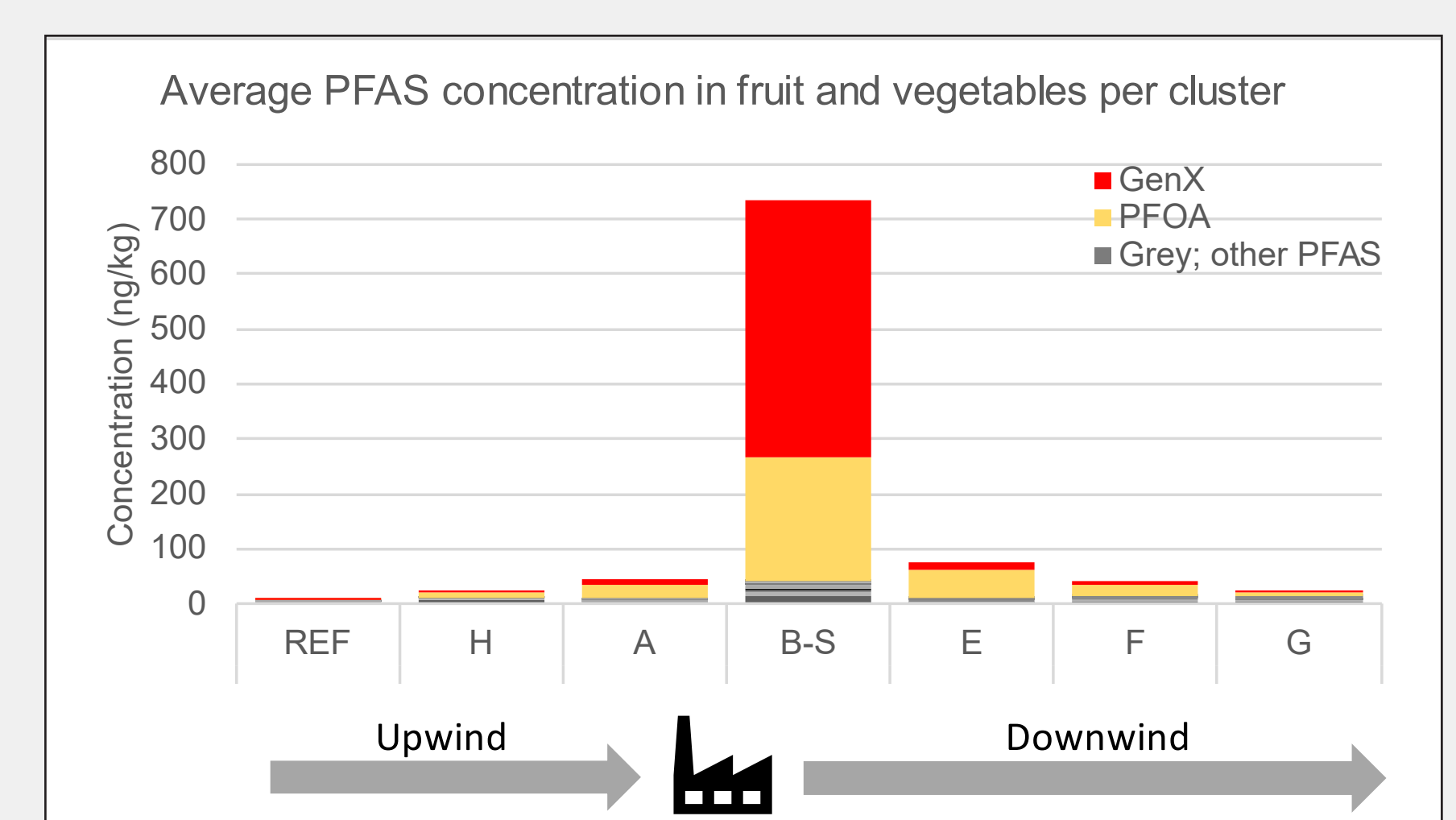
- 19 vegetable garden allotments up to 15 km downwind from the factory;
- 2 reference garden allotments;
- 750 analyses of 25 different fruit and vegetables, with most recent analytical technology (picogram/gram) by WFSR (Wageningen Food Safety Research);
- Analyses of concentrations in soil, groundwater, surface water and irrigation water at all allotments.



Results:

Intake:

The results were used by the Dutch National Institute for Public Health and the Environment (RIVM) to determine whether the intake of PFAS through local crops posed a risk to human health and whether it is safe to eat crops from the gardens. RIVM advised to not consume vegetables from gardens within 1 km of the site. For the wider area around the factory (up to 10 km downwind) the advice was to vary consumption of garden produce with vegetables from stores.



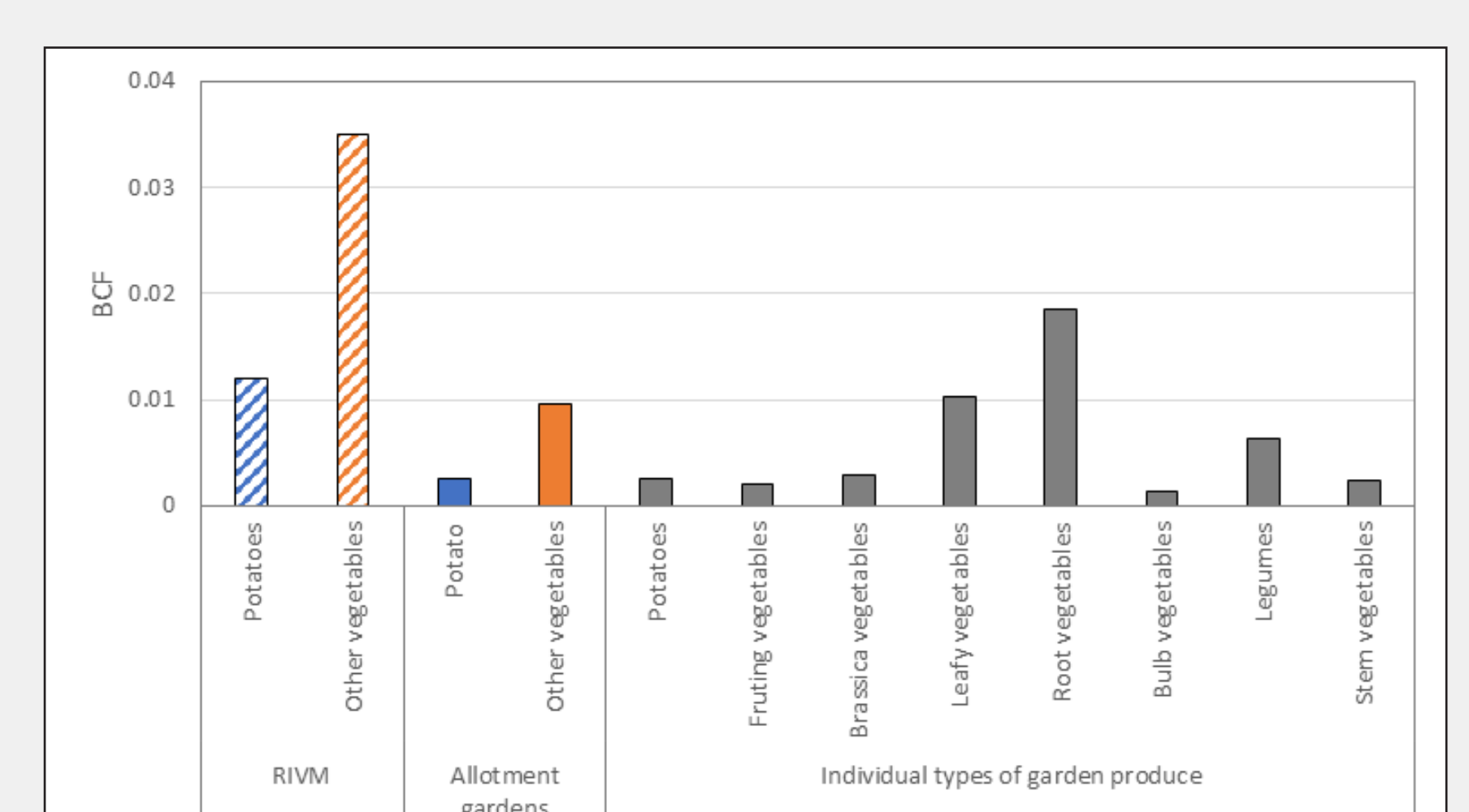
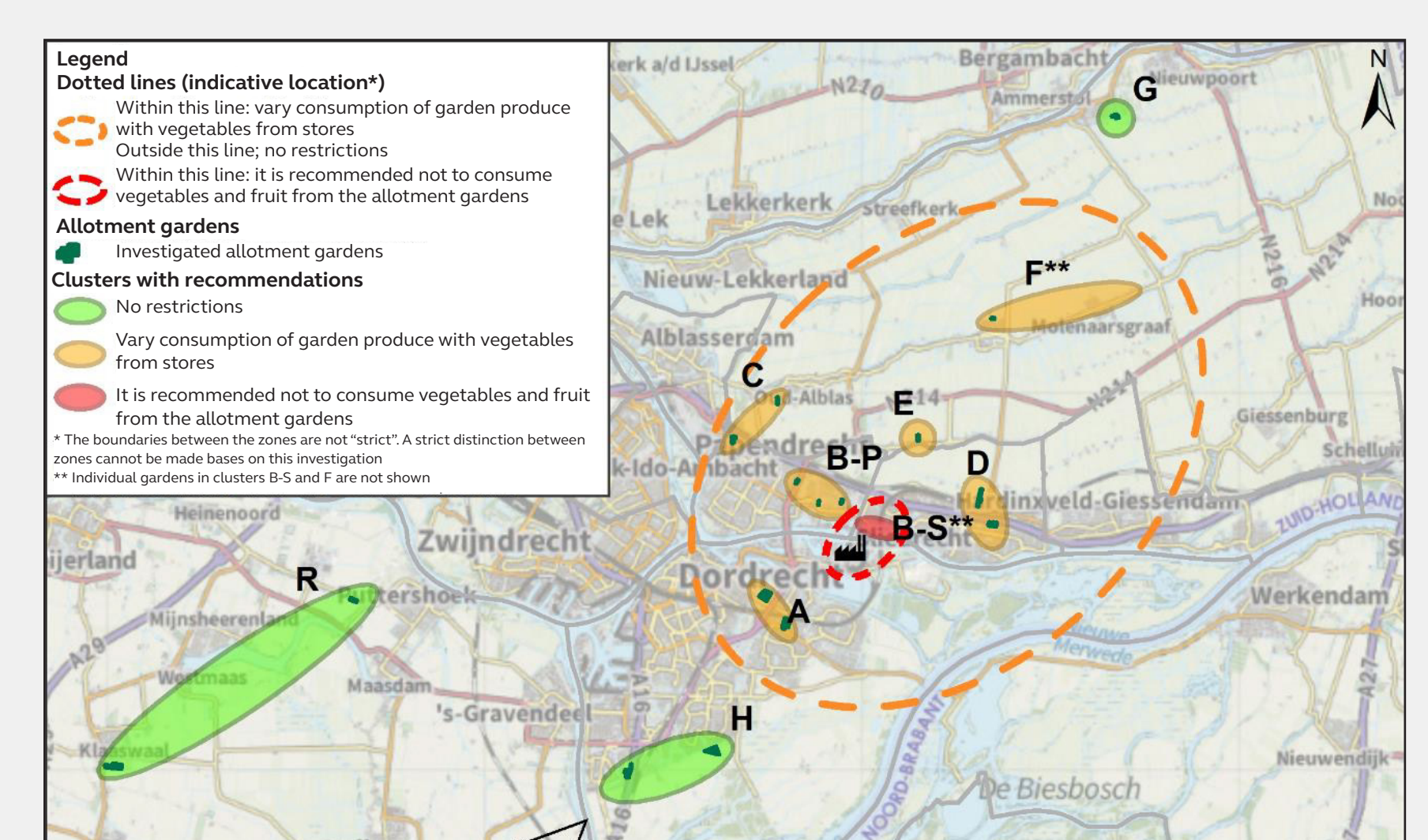
Use of irrigation water:

Based on the concentrations found in the area it is advised that:

- Rainwater can be safely used for irrigation;
- Surface water can be used, but not in the direct proximity of the plant (cluster B-S) and in moderation in cluster B-P.

Soil/water relationships:

- Soil target level for PFOA in vegetable gardens in the Netherlands is 2.3 µg/kg (RIVM), which is close to background concentration;
- Bioconcentration factors under field circumstances are lower than anticipated;
- Advise: use location specific screening value for vegetable gardens in this area of 4.6 µg/kg.



References:

RIVM (2022): *Risicobeoordeling van PFAS in moestuingewassen uit moestuinen in de gemeenten Dordrecht, Papendrecht, Sliedrecht en Molenlanden*. RIVM-briefrapport 2022-0010. P.E. Boon, J.D. te Biesebeek. <https://www.rivm.nl/publicaties/risicobeoordeling-pfas-moestuingewassen-dordrecht-papendrecht-sliedrecht-molenlanden>

Arcadis (2023): *PFAS in grond en water in moestuinen in de gemeenten Dordrecht, Papendrecht, Sliedrecht en Molenlanden*. Elisabeth van Bentum, Tessa Pancras. <https://www.ozhz.nl/wp-content/uploads/Rapport-PFAS-moestuinen-grond-en-wateronderzoek.pdf>