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F-gas Use, Scale and Environment (FUSE4i): An Improved Indicative Inventory for Ireland

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What did the research aim to address?

The research aimed to address the environmental challenge posed by sulfur hexafluoride (SF_6), a potent greenhouse gas used in various equipment and industries. The knowledge gap focused on understanding SF_6 usage, emissions and alternatives in Ireland. This research is crucial for helping policymakers, environmental agencies and industries mitigate SF_6 emissions, comply with regulations and transition to sustainable practices. The study combined data analysis, stakeholder consultations and innovative modelling to assess SF_6 usage and emissions. It explored alternatives and recommended best practices for SF_6 management, emphasising the need for accurate data collection and reporting.

What did the research find?

The research identified significant SF_6 usage in Ireland, primarily in the power and semiconductor industries. It highlighted the environmental impact of SF_6 emissions and the need for accurate data collection and reporting. A review of information required in environmental impact assessments regarding end-of-life management of SF_6-containing switchgear should be conducted. The findings provide a comprehensive understanding of SF_6 emissions, helping to bridge the knowledge gap and inform strategies for reducing emissions. The research is crucial for helping policymakers, environmental agencies and industries develop effective SF_6 management practices, especially in light of the circular economy aims. The project produced detailed data on SF_6 usage and emissions, along with recommendations for best practices and potential alternatives. This research advances the state of the art by providing a detailed analysis of SF_6 emissions and offering innovative solutions for mitigation. The research assumes accurate self-reporting by industries and may be limited by the availability of comprehensive data from all sectors.

How can the research findings be used?

Implementing the research findings involves enhancing data collection and reporting mechanisms, promoting SF_6 alternatives and increasing stakeholder engagement. Training and certification programmes for SF_6 handling should be expanded. The research supports policy development by providing a detailed understanding of SF_6 emissions and promoting best practices for SF_6 management. It aims to reduce SF_6 emissions, contributing to climate goals. The primary target audience of this research is the EPA's Emissions Statistics Team; however, the Department of Climate, Energy and the Environment and the EPA Office of Environmental Enforcement may also find these insights useful for developing regulations, improving SF_6 management and transitioning to sustainable alternatives. Opportunities include leveraging new EU regulations and enhancing collaboration with industry stakeholders. Future research should address gaps in data from the private sector, explore additional SF_6 alternatives and develop more accurate emission estimation methods.

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