

Are lithium-ion batteries a PFAS?

Nature Communications 15, Article number: 5548 (2024) Cite this article Lithium-ion batteries (LiBs) are used globally as a key component of clean and sustainable energy infrastructure, and emerging LiB technologies have incorporated a class of per- and polyfluoroalkyl substances (PFAS) known as bis-perfluoroalkyl sulfonimides (bis-FASIs).

Are lithium-ion batteries causing PFAS contamination?

In a study published July 8 in Nature Communications, Ferguson and colleagues have identified the production and disposal of lithium-ion batteries as an increasing source of a troubling sub-class of PFAS contamination.

Can PFAS be recycled in lithium-ion batteries?

Per- and polyfluoroalkyl substances (PFAS) are a large class of highly persistent organic substances, many of which are bioaccumulative and toxic. One of the many uses of PFAS is in lithium-ion batteries (LIBs). Recycling of LIBs is a rapidly growing industry, yet the potential for PFAS emission during this process remains unclear.

Are PFAS 'Forever Chemicals' a problem?

"We've discovered that an understudied type of PFAS or "forever chemicals" called bis-FASIs, such as those used in lithium-ion battery production, are an emerging issue not only for communities near manufacturing sites, but also anywhere these batteries are thrown away," said Ferguson.

What is a lithium ion battery?

Provided by the Springer Nature SharedIt content-sharing initiative Lithium-ion batteries (LiBs) are used globally as a key component of clean and sustainable energy infrastructure, and emerging LiB technologies have incorporated a class of per- and polyfluoroalkyl substances (PFAS) known as bis-perfluoroalkyl sulfonimides (bis-FASIs).

Are rechargeable lithium-ion batteries a source of 'Forever Chemicals'?

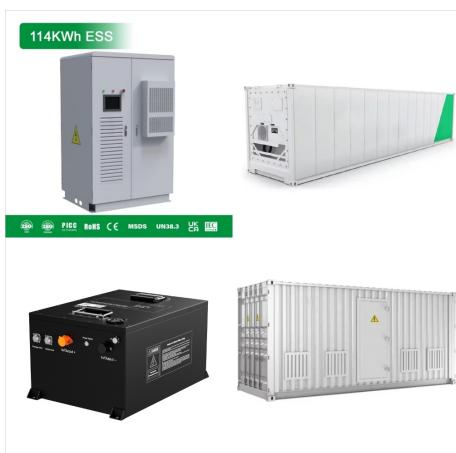
Rechargeable lithium-ion batteries used in everyday gadgets, electric vehicles, and to store renewable energy could be a growing source of the "forever chemicals" that pollute soil and waterways, new research suggests. "Forever chemicals" encompass thousands of different kinds of per- and polyfluoroalkyl substances (PFAS).



Some lithium-ion battery technologies use a class of PFAS chemicals, or per-and polyfluoroalkyl substances, that helps make batteries less flammable and conduct electricity. Scientists found high levels of these PFAS in air, water, snow, soil, and sediment samples near plants that make those chemicals in the US, Belgium, and France, according

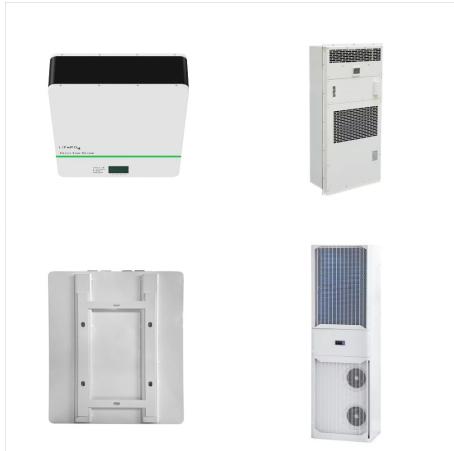


Texas Tech University's Jennifer Guelfo was part of a research team that found the use of a novel sub-class of per- and polyfluoroalkyl (PFAS) in lithium ion batteries is a growing source of

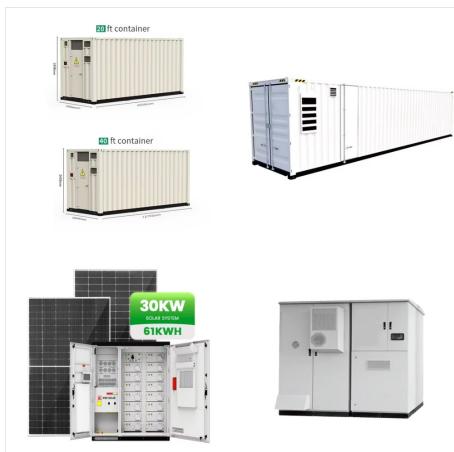


By Shannon Kelleher A type of toxic PFAS in lithium-ion batteries that power electric vehicles and other electronics is polluting air, soil and water in the United States and Europe, adding to concerns that the growing clean energy sector could harm the environment even as it strives to combat climate change, according to a new study. Researchers said they analyzed a?

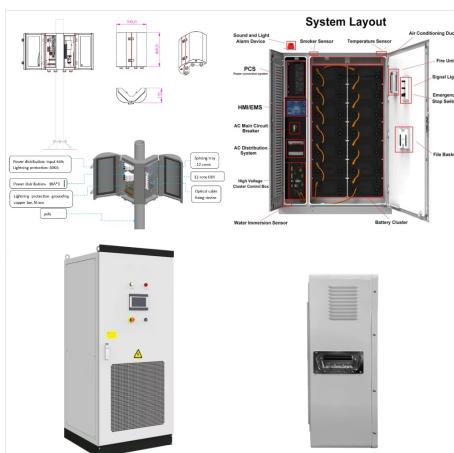
PFAS IN LITHIUM BATTERIES



Researchers say lithium-ion batteries part of PFAS problem. Duke University team led by Lee Ferguson calls lithium-ion batteries an increasing source of one subclass of PFAS contamination, including near landfills. While electric vehicle batteries are banned from landfills and instead largely repurposed and recycled, numerous smaller lithium



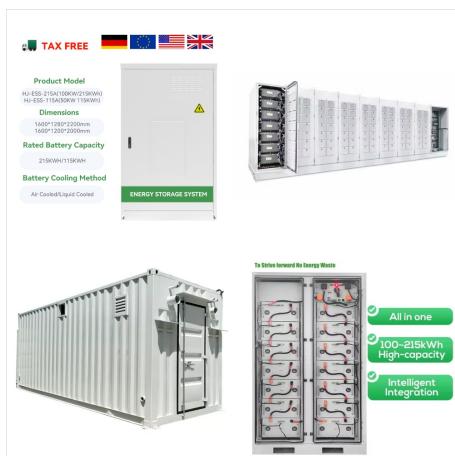
The advanced rechargeable and lithium batteries value chain in Europe, as represented by RECHARGE, studied this restriction proposal and more specifically one of the 16 reports accompanying it, the "report summary electronics and energy a?? July 2021" dealing with batteries. B a?? PFAS IN BATTERIES: MAIN USES, POTENTIAL EMISSIONS AND



Driven by the global popularity of electric vehicles and the shortage of critical raw materials for batteries, the spent lithium-ion power battery (LIPB) recycling industry has exhibited explosive growth in both quantity and scale. However, relatively little information is known about the environmental risks posed by LIPB recycling, in particular with regards to perfluoroalkyl and



The use of a novel sub-class of per- and polyfluoroalkyl substances (PFAS) in lithium-ion batteries is polluting air and water, according to a new peer-reviewed study published in *Nature Communications*. Testing by the research team further found that these PFAS, called bis-perfluoroalkyl sulfonimides (bis-FASIs), demonstrate environmental



Include an exemption from the PFAS restriction for the lithium-ion battery cell manufacturing process
Despite more than 30 years of research, as well as considerable investments from many of our fully electric OEMs, it is clear that no viable alternative to PFAS for the cell manufacturing process of lithium-ion batteries has emerged.



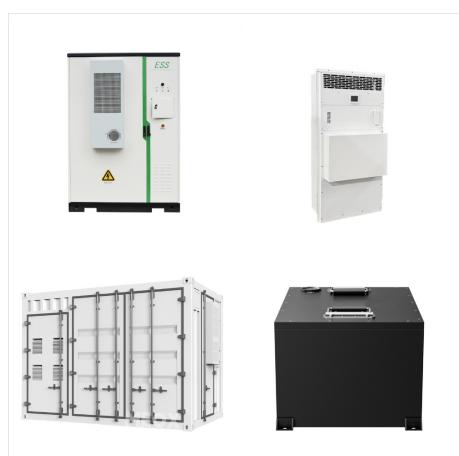
Recycling of lithium-ion batteries (LIBs) is a rapidly growing industry, which is vital to address the increasing demand for metals, and to achieve a sustainable circular economy. Relatively little information is known about the environmental risks posed by LIB recycling, in particular with regards to the environmental exposure and impacts.



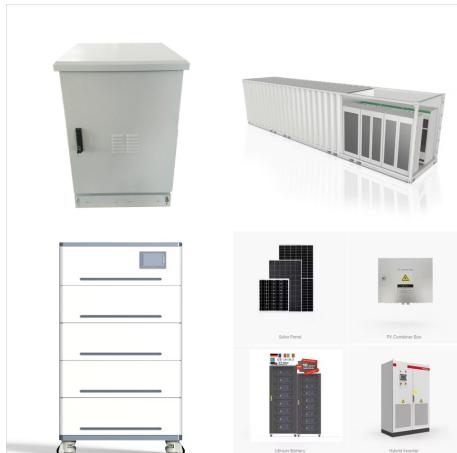
This research was supported by the Ed and Linda Whitacre Faculty Fellowship at Texas Tech University, the Duke University Superfund Research Center (National Institute of Environmental Health Sciences award number a?)



The specific class of PFAS that Guelfo's team found is called bis-perfluoroalkyl sulfonimides, or bis-FASIs. Scientists tested more than a dozen lithium-ion batteries used in EVs and consumer



Lithium-ion batteries (LiBs) are used globally as a key component of clean and sustainable energy infrastructure, and emerging LiB technologies have incorporated a class of per- and polyfluoroalkyl substances (PFAS) known as bis-perfluoroalkyl sulfonimides (bis-FASIs). PFAS are recognized internationally as recalcitrant contaminants, a subset



Rechargeable batteries contain bis-FASIs, a type of PFAS that could persist in the environment and pose health risks. The study detected bis-FASIs in soil, water, and leachates near manufacturing facilities and landfills.



Texas Tech University's Jennifer Guelfo was part of a research team that found the use of a novel sub-class of per- and polyfluoroalkyl (PFAS) in lithium ion batteries is a growing source of pollution in air and water.. The findings were published in a peer-reviewed study in Nature Communications today (July 8).. Testing by the research team further found these a?|



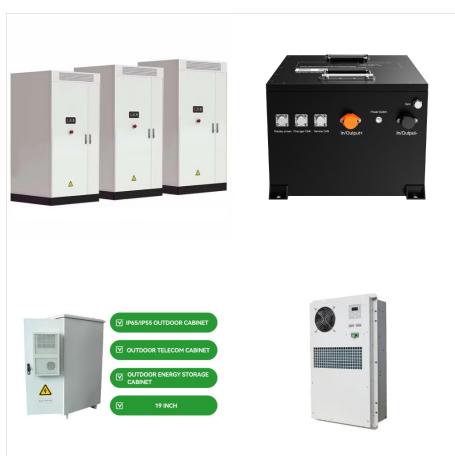
By successfully demonstrating the removal of persistent forever chemicals from lithium battery cells, we believe we are well-positioned to address a critical challenge facing the future of energy storage." Today, traditional lithium-ion battery production relies on both PFAS and toxic solvents like NMP (N-Methyl-2-Pyrrolidone).



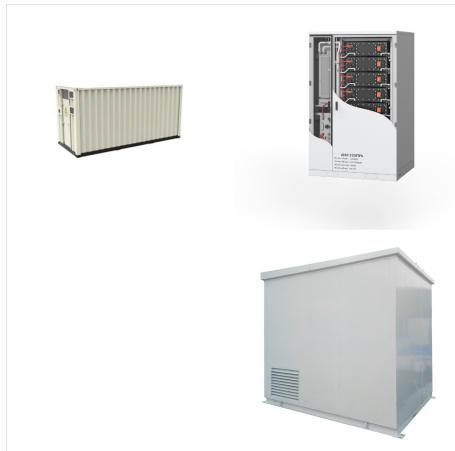
The Unseen Consequences of Clean Energy: PFAS Pollution from Lithium-Ion Batteries. On July 9, 2024, a groundbreaking study led by Professor Lee Ferguson from the Pratt School of Engineering at Duke University was published in Nature Communications, revealing a troubling source of per- and polyfluoroalkyl substances (PFAS) pollution linked to the a?|



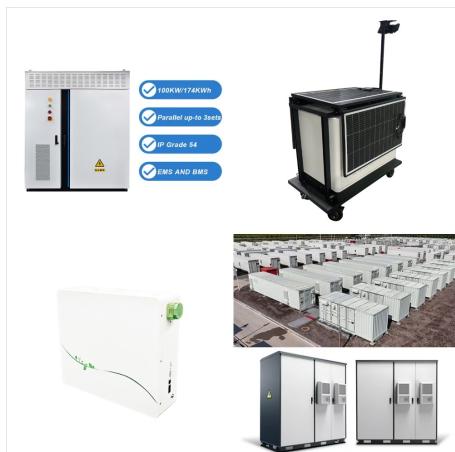
A study by Texas Tech University and Duke University reveals that bis-perfluoroalkyl sulfonimides (bis-FASIs), a sub-class of per- and polyfluoroalkyl (PFAS) used in lithium ion batteries, are highly persistent and toxic in the a?|



An open-access published in Nature Communications reports that the use of a novel sub-class of per- and polyfluoroalkyl substances (PFAS) in lithium-ion batteries is a growing source of pollution in air and water. Testing by the research team further found these PFAS, called bis-perfluoroalkyl sulfonimides (bis-FASIs), demonstrate environmental persistence and



Per- and polyfluoroalkyl substances (PFAS) used in many lithium battery electrolytes pose an underappreciated threat to the environment, according to a new report. The researchers behind the finding say that the material must be removed from wastewater streams and call for a more holistic approach to the design of green energy technologies to



This will greatly impact the lithium battery industry, as PFAS are commonly used in electrode production. Using their proprietary dry electrode battery manufacturing process, Dragonfly Energy has



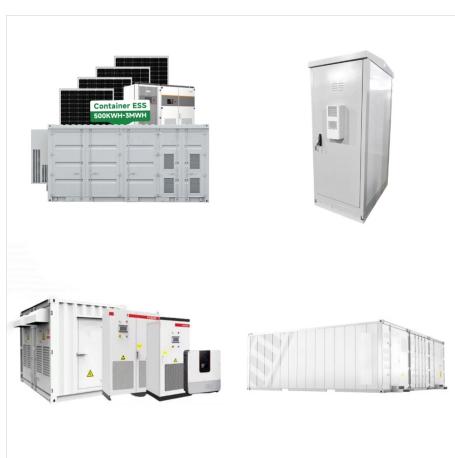
PDF | Lithium ion batteries (LiBs) are used globally as a key component of clean and sustainable energy infrastructure 1,2 . PFAS are recognized internationally as recalcitrant, mobile, and



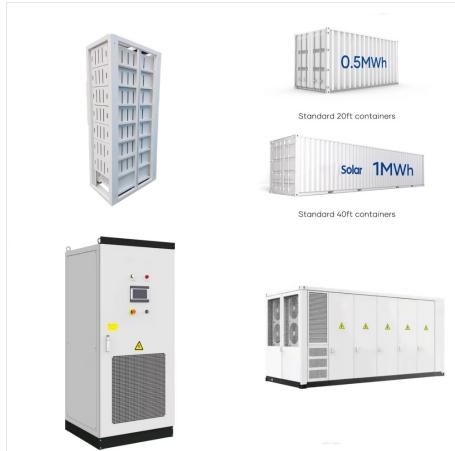
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potential non-PFAS alternatives to Lithium-Ion batteries. This is because: Solid state batteries use PFAS, specifically PVDF and PTFE in the binder within the active material, in solid electrolytes and in gel polymer electrolytes. Although lead based batteries do not use PFAS in active materials, they use PFAS containing valves and membranes.



PFAS chemicals have been found in windmill coatings, semiconductors, solar collectors, and photovoltaic cells." Phys reports: Texas Tech University's Jennifer Guelfo was part of a research team that found the use of a novel sub-class of per- and polyfluoroalkyl (PFAS) in lithium ion batteries is a growing source of pollution in air and



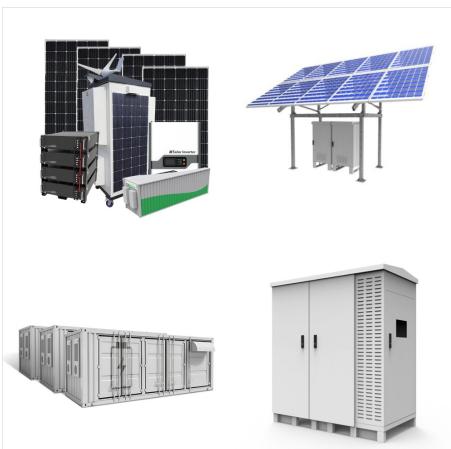
New research reveals that PFAS chemicals in lithium ion batteries, essential for clean energy, are significant pollutants, impacting both environment and health.. Tom Perkins reports for The Guardian.. In short: A subclass of PFAS called bis-FASI, used in lithium ion batteries, has been found in the environment near manufacturing plants and in remote areas a?|



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In this work, suspect screening and nontarget analysis were carried out to characterize PFAS in soil, dust, water and sediment from a LIPB recycling area. Twenty-five PFAS from nine classes were identified at confidence level 3 a?|



Studies have noted uses of PFAS in the energy sector including windmill coatings, semiconductors, solar collectors, and photovoltaic cells. 17. Literature. 19a??21. and patents. 3a??5. also document use of PFAS as electrolytes in rechargeable, lithium (Li)-ion batteries (LiBs). LiB electrolytes must be conductive and



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