

Scientists cage chemical demon

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A Cambridge University-led research team has discovered a technique to safely handle and transport white phosphorous.

For centuries it has been known for its violent combustion upon contact with air - but this week a Cambridge-led team of researchers reveals that it has tamed one of the most hazardous chemical substances.

Their work could also result in an array of hazardous chemicals being handled and transported more safely in future.

The substance in question is white phosphorous, a feedstock for the preparation of many useful chemicals such as weed killers, insecticides and fertiliser.

White phosphorous is also infamous for its propensity to burst into flame. For this reason it is often used in military campaigns to create smokescreens to mask movement from the enemy, as well as an incendiary in bombs, artillery and mortars.

This research, published this week in the journal *Science*, was carried out by a team consisting of Prasenjit Mal, Boris Breiner and senior author Jonathan Nitschke at the University of Cambridge's Department of Chemistry, together with Kari Rissanen from the University of Jyväskylä in Finland.

The team created a 'container molecule' to stabilise white phosphorous indefinitely. This renders it safe until such time as a signal agent,

benzene, is applied to release it.

The practical implications of the research are impressive: the technique of 'caging' individual molecules of the substance allows it to be manipulated and stored with greater safety, and has the potential to be used to tame other dangerous chemicals.

Dr Nitschke says: "It is foreseeable that our technique might be used to clean up a white phosphorous spill, either as part of an industrial accident or in a war zone. In addition to its ability to inflict grievous harm while burning, white phosphorous is very toxic and poses a major environmental hazard."

Source: University of Cambridge ([news](#) : [web](#))

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