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**DESIGN OF A SAFER LITHIUM COIN CELL BATTERY**

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**Background** Ingestion of a lithium coin cell battery can result in serious injuries and the incidents are on the rise. Small size and coin-like appearance of the batteries make it very difficult to be aware of the ingestion promptly, which hinders a timely medical treatment.

**Aims/Objectives/Purpose** To cope with the growing health threat this research focuses on responsive polymer materials and reactive structure of coin cell batteries through an interdisciplinary approach of industrial design and chemical engineering.

**Methods** We designed a safer lithium coin cell battery to discourage swallowing and, even if ingested, provide a visible alarm instantly to nearby caregivers. In addition, the battery may remain inactive in an alimentary canal to minimise the likelihood of injuries associated with the ingestion.

**Results/Outcome** In simulation experiments, our prototypes emitted an easily noticeable warning immediately after ingestion and remained inert for more than 8 h, showing a stark contrast to untreated batteries that caused a pH spike. The result suggests that the safety features may help an ingested battery be evacuated safely without inflicting injury on the body.

**Significance/Contribution to the Field** Our design may contribute to decreasing the ingestion cases and their consequent injuries through industrial application.