

# Lessons Learn



## What happened?

Oct 2019

Time: December 26, 2018

Subject: Explosion, landfill leachate

Location: Environmental Engineering Laboratory, Building 2, East Campus, Beijing Jiaotong University

At around 9:30 am on December 26, 2018, students from the Department of Municipal and Environmental Engineering of Beijing Jiaotong University conducted a landfill leachate wastewater treatment research experiment in the Environmental Engineering Laboratory of Building 2 of the East Campus of the school. An explosion occurred on the site and the accident caused 3 people to participate. The graduate student of the experiment was killed.



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## What have we learned from this?

Analysis of investigation, the accident, in the treatment of landfill leachate during the use of a stirrer magnesium phosphate and stirring, during the reaction, the hydrogen gas generated in the mixer hopper metal friction hinge, the spark ignition collision explosions, sparking magnesium dust cloud explosion, explosion surrounding magnesium and other combustibles burn. In addition, the illegal conduct test operation at risk; illegal purchase, illegal storage of hazardous chemicals; laboratory research and safety management is not in place leading to the indirect cause of this accident.

- Carry out the risk assessment before the experiment, analyze what risks will exist during the experiment, and then understand what the worst situation of these

## What steps should we take?

- Establish a centralized and unified whole-process management platform for hazardous chemicals, and strengthen the management of the purchase, transportation, storage and use of hazardous chemicals.
- Establish storage sites for hazardous chemicals that meet safety requirements, establish a centralized use system for hazardous chemicals, and seriously investigate and punish illegal storage of hazardous chemicals.
- Conduct targeted safety training and emergency drills on hazardous chemicals.
- Establish a complete security risk assessment system for scientific research projects, and conduct

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risks is and how to prevent the worst consequences.

- Select the appropriate experimental method and formulate the experimental safe operation specifications.
- The selected experimental equipment and equipment should meet the requirements of fire and explosion protection.
- The relevant personnel should receive corresponding training before the experiment, including the risks that may exist during the experiment, the experimental operation procedures, and the precautionary measures in the emergency.

a substantial review of the security content involved in scientific research projects.

- Carry out record review of hazardous chemicals, instruments and equipment and test sites required for research projects, and take necessary safety protection measures.
- Improve the laboratory management system and achieve classified management.
- Clarify the scope, personnel, and approval authority of each laboratory to conduct tests, and strictly implement the relevant system for laboratory use registration.
- According to the actual situation of laboratory safety management, personnel with corresponding professional ability and work experience are responsible for laboratory safety management.

***Nothing we do is worth getting hurt for !***