

Lessons Learned

Gas Exposure in the Laboratory



What Happened?

A student was performing plasmid preparations; which involve harvesting, lysis, and purification of bacterial DNA by processing it through several buffers. The buffer (B3 from Qiagen kit) used to neutralize the lysis buffer (B2) in this process contained up to 25% acetic acid.

Upon completion of the plasmid preparation, the student added chlorine bleach to the buffer mixture to disinfect it prior to drain disposal. Immediately upon adding the bleach, the container began to bubble over and **the student's eyes became red and irritated. The buffer/bleach solution overflowed the container and spilled out into the lab**, and a strong chlorine smell filled the entire lab space. The student then flushed her eyes at the eyewash station. EHS was immediately notified and escorted the student for medical follow-up and cleaned up the spill.



The workstation after the buffer/bleach spill.

Why Did This Happen?

- The addition of the bleach to the acid contacting buffers resulted in the release of chlorine gas.
- The student, who was new to the plasmid preparation procedure and was not familiar with the chemical components of the different buffers, was given **improper directions** on the disposal of the used solutions.
- The buffer solution used in the procedure did not contain any potentially infectious material and did not require disinfection.

Lessons Learned

- Standard laboratory procedures for routine tasks should have **well documented information for all steps of the process**, including as proper disposal methods.
- Researchers utilizing various manufacturers' kits should be familiar with the chemical ingredients in each component within those kits, and **follow the manufacturer's instructions**.
- For more information, please consult the following resources available on the EHS website:
 - [Laboratorian Resources](#)
 - [Laboratory Safety FAQ](#)
 - [Chemical Safety Tools and Resources](#)
 - [Chemical Safety FAQ](#)



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