CHEMISTRY BASIC TRAINING

LAB SAFETY

"I'VE GOT TO KNOW SCIENCE THOROUGHLY TO BECOME A SCIENTIFIC DETECTIVE."

- BATMAN

- THE FLASH AT WORK IN THE SCHOOL CHEMISTRY LABORATORY. DC COMICS.
- WHAT'S WRONG?

ADAPTED FROM DI RADDO (2006).

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- WHAT'S WRONG?

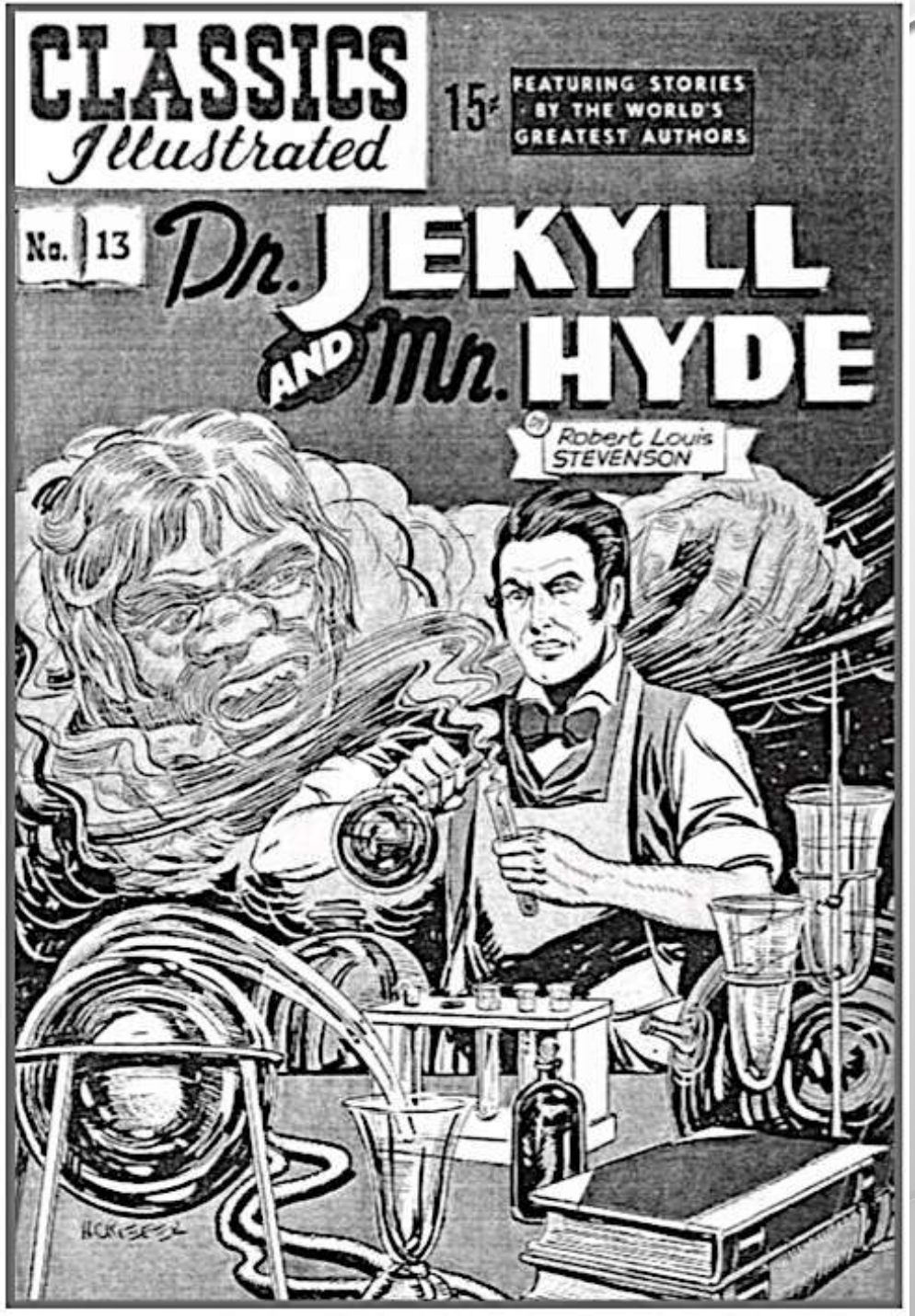
ADAPTED FROM DI RADDO (2006).

- BRUCE WAYNE (BATMAN) EXPERIMENTING IN THE BAT CAVE. DC COMICS.
- IS BATMAN FOLLOWING PROPER LAB SAFETY PROTOCOL?

ADAPTED FROM DI RADDO (2006).

- DR. JEKYLL PREPARES A FROTHY SOLUTION. COPYRIGHT 1951 GILBERTON COMPANY.
- IS DR. JEKYLL FOLLOWING PROPER LAB SAFETY PROTOCOL?

ADAPTED FROM DI RADDO (2006).



NOTABLE ISSUES

- PROTECTIVE EYEWEAR (SAFETY GLASSES OR GOGGLES)
- LACK OF VENTILATION (NO FUME HOODS)
- INAPPROPRIATE ATTIRE (SUIT, NECKTIE, LOOSE-FITTING CLOTHING) -> SHOULD BE WEARING LAB COAT
- UNCORKED FLASKS WITH VOLATILE LIQUIDS
- SMOKING IN THE LAB
- PHYSICAL OBSTRUCTIONS (BENCH CLUTTER)
- CLEANING UP GLASS WITHOUT THE USE OF GLOVES OR A DUSTPAN
- DECANTING LIQUIDS WITHOUT GRADUATED CYLINDER, FUNNEL, OR TEST TUBE CLAMP

NOT-SO-GREAT MOMENTS IN CHEMICAL SAFETY

- Not long after Humphry Davy (1778–1829) discovered potassium, Gay-Lussac (1778–1850) began studying the metal. Given potassium's violent reactivity, an accident was probably inevitable, even for a meticulous experimenter like Gay-Lussac.
- In 1808 a potassium explosion temporarily blinded the young chemist. His eyesight was never fully restored.
- What preventative safety measure(s) could have protected Gay-Lussac's eyesight?

Adapted from Michalovic (2008)

NOT-SO-GREAT MOMENTS IN CHEMICAL SAFETY

- Robert Bunsen (1811–1899) also could have used some eye protection. He had always been a risk taker: he was known for climbing into the mouths of Icelandic geysers on the verge of eruption to measure water temperatures. From these data he developed models to describe how geysers erupt that are still accepted today.
- For all the danger he faced from the earth's fury, it was back in his laboratory in Germany that his luck ran out. In 1843, a flask containing cacodyl chloride (C_2H_6AsCl) exploded in Bunsen's face, and he permanently lost the use of his right eye.
- Why do you think so many famous scientists failed to wear basic lab goggles?

Adapted from Michalovic (2008)

WORST LAB ACCIDENTS IN HISTORY

- On April 12th, 2011, Michele Dufault's life came to a heart wrenchingly tragic end. The 22-year-old Yale physics student was up late at night working alone in the chemistry department's machine shop, using an industrial lathe. Sadly, nobody was around to help Dufault when her hair became tangled in the rapidly spinning tool, which wrapped around her neck in a deadly instant. She died of strangulation, just weeks away from graduation.
- What major safety procedures were violated?

Adapted from Real Clear Science (n.d.).

WORST LAB ACCIDENTS IN HISTORY

- Hydrofluoric acid is commonly used in geology as a way to extract microscopic fossils from sedimentary rock. The rock dissolves in the acid, leaving the acid-insoluble fossils behind. A technician in Australia accidentally spilled hydrofluoric acid on himself, burning 9% of his body.
- What should you do if you spill acid on yourself?

Adapted from Real Clear Science (n.d.).

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