

Ampoule Opening Device: Lessons Learned from Incident Study of Sharp Injuries

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18-A-261-ABSA

Poster # 22

Abstract

Gaithersburg Safety, Health, and Environment (GB SHE) department conducted an investigation of an incident involving the opening of a glass ampoule. Following further research, it was determined that a common practice amongst the research staff for opening ampoules was by free-hand handling techniques. The risk for a sharp injury was high when not using an ampoule opening device. The objective of this assessment was to determine a safer method for opening glass ampoules and to spread awareness to other employees in prevention of sharps injuries. An alternative device for opening an ampoule was researched and tested by the GB SHE group and research staff. It was concluded that not all ampoule opening devices provide ease-of-use and should be tested prior to implementing into laboratory procedures.

Background

Much can be learned and shared by conducting thorough incident investigations and implementing subsequent Corrective Action/Preventative Actions (CAPAs) plans.

In early 2015, our site incurred several laceration events due to breaking open glass ampoules. Upon further investigation, it was determined that ampoule opening devices were not used or readily available or scientists were not aware such devices existed. In a few instances, the scientists did not consider the glass ampoule a 'sharp', since the use of the reagent in the ampoule was used infrequently.

GBSHE partnered with one of the injured scientists to determine a solution that was safe and that would also be used by the scientists. Several devices were jointly selected and tested by the scientist; and then a marketing campaign was developed to spread awareness and implementation across campus.

Materials & Methods

Identification of common ampoule sizes



Identification of ampoule opening devices to test

Used onsite vendor to procure opening devices based on size needed

- Ampule breaker/collar
- Ampule Breaker
- Ampule Breaker, Hach
- Sepha Clic Open Device
- SCIENCEWARE[®] Break-Safe[™] Ampule Opener
- SnapIT

Test ampoule opening device to determine ease of use and safety (using empty glass ampoule)



Results

Six ampoule opening devices from six different vendors were tested using empty amber glass ampoules. A small absorbent pad was added during the procedure which served as an additional protective barrier and assisted with the grip on the glass ampoule.

The SnapIT ampoule opening device was deemed the easiest to use by our scientists and best met our safety criteria.



Pros

- + Reusable
- + Easy to use
- + Comes in several sizes
- + One-handed ejection directly into sharps container
- + Less stress on wrist

Cons

- If top of ampoule is not properly secured in device, it may self-eject after breaking open the ampoule
- Maintenance

Spreading awareness

- Incorporated into Laboratory Safety Training
- MedImmune Gadget Show (2 minute video / campus competition)
- Safety Alert (displayed on internal lab communication screens)
- Stock Room (ensuring item was readily available in the lab supply stockrooms)
- R&D Newsletter (monthly newsletter - topic was injury prevention)
- Safety Fair (hands-on exercise to try ampoule opener)



Key Learnings

- Involvement of impacted staff in investigation and mitigation of unsafe conditions is imperative to sustainable preventative actions and unsafe behaviors.
- Not all safety devices are the same – testing is critical prior to implementation.
- Refresher training is necessary – especially for new safety devices or techniques.
- Ensuring availability of an alternate to the preferred safety device is essential in the event the preferred device is not available.
- Multiple avenues of spreading awareness are necessary – not everyone reads emails.

References

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Acknowledgements

Trinity Perry
Lance Thompson
Lou Steele
Bryce Downey

