

Corrective Action Plan Expired Materials

Incident Date: Ongoing. Identified May 2, 2022.

Incident Type: Other

Incident Description: The newly implemented monthly reagent checks were performed May 2nd and 3rd of 2022. During the checks, it was discovered that a few materials used to both make and verify the reagents were out of date, specifically acetaldehyde (C-13-001), glycerin (C-13-0040 and C-15-0045), and vanillin (C-16-0016).

LOG-16-05 Standards, Controls, and Reagents

"3.3.3 Reagents, stock solutions, reference material dilutions and chemicals used in the Laboratory shall be re-verified for each day of testing that exceeds the earliest "expiration date" designated by the manufacturer of the parent reagent or compound. Each shall be determined to still be suitable for its intended purpose before being used in casework. If acceptable re-verification is not achieved, the reagent or solution may not be used in casework.

3.3.4 Reagents used for presumptive testing shall be verified the first business day of each month using positive and negative control samples. A Reagent Verification Log Book shall be maintained. Reagents used for extraction shall be evaluated using appropriate analytical methodology."

Proposed Corrective Action(s):

1. Verify the four expired chemicals to ensure fit for use.
 - a. Acetaldehyde (C-13-001)
 - b. Glycerin (C-13-0040)
 - c. Glycerin (C-15-0045)
 - d. Vanillin (C-16-0016)
2. Perform a complete, physical inventory of all materials.
3. Distinguish old materials, and identify expired materials.
4. Order new materials for any standard, reagent, or chemical in which an old and/or expired material needs to be disposed of.
5. Re-verify any material which should be disposed of but is essential for casework while awaiting new materials ordered.
6. Dispose of any old or expired materials which are not currently a necessity for casework.
7. Properly label and store all new materials upon receipt.
8. Dispose of all remaining old and/or expired materials.
9. Update the Master Inventory Spreadsheet.
10. Update policy to reflect how often materials should be retested or disposed of.

Timeframe for Corrective Action(s): two months

Comment(s): See Laboratory Director's supplement.

Currently, our Standard Operating Procedures (SOPs) are being revised. Under the proposed SOPs going forward, this would have been considered an incident and an incident form completed; however, with the expired formaldehyde identified in March, this would warrant a corrective action.

Alex Fager SD
Applicable Analyst / Discipline

05/18/22
Date

Staci Old Seized Drugs
Applicable Analyst / Discipline

5/18/22
Date

Alina Horta
Lab Quality Manager

18 May 2022
Date

[Signature]
Laboratory Director

18 May 2022
Date

**BRAZORIA COUNTY SHERIFF'S OFFICE
CRIME LABORATORY**

Supplement to Corrective Action Plan – Expired Chemicals

May 5, 2022

This supplement details the portion of the corrective action plan in which the expired chemicals in question were characterized by instrumental analysis and any information on their viability discussed. The chemicals in question - acetaldehyde (BCCL chemical C-13-001) was manufactured by MCB Chemicals – lot, date of production, expiration, and receipt date unknown; vanillin (BCCL chemical C-16-0016) was received in February 2016 and has suggested retest date of July 2020; glycerin (BCCL chemical C-13-0040) was received in July 2013 and has an expiration date of June 2015; and glycerin (BCCL chemical C-15-0045) was received in January 2015 and has an expiration date of May 2020.

Acetaldehyde analysis on the Gas Chromatograph/Mass Spectrometer (GC/MS) revealed the presence of acetaldehyde (C₂H₄O) and paraldehyde (C₆H₁₂O₃) – the cyclic trimer of acetaldehyde. Acetaldehyde is used in the preparation of the Duquenois reagent which is utilized in the testing of suspected cannabinoid containing compounds.

Vanillin analysis on the Gas Chromatograph/Mass Spectrometer (GC/MS) revealed the presence of vanillin. Vanillin is used in the preparation of the Duquenois reagent used in the testing of suspected cannabinoid containing compounds. To prepare the Duquenois reagent, vanillin and acetaldehyde are added to ethanol. The reagent is stored under refrigeration.

Analysis of both lots of glycerin of the Gas Chromatograph/Mass Spectrometer (GC/MS) revealed the presence of glycerin. Glycerin is used in the preparation of the Cobalt thiocyanate (Scott's) reagent utilized in the testing of suspected cocaine and phencyclidine submissions. To prepare the reagent, cobalt thiocyanate is dissolved in purified water and diluted with glycerin.

Reagents used in presumptive chemical testing are subjected to quality testing before use in casework. For each of the previously mentioned reagents - Duquenois (acetaldehyde and vanillin) and Cobalt thiocyanate (glycerin) – quality tests conducted with known cannabinoid and cocaine standards have always returned the correct color results. This does not offset the fact the chemicals in questions were not retested or replaced before their expiration, it does offer assurance that the composition of the chemicals in question are still viable and allowed the reactions to proceed to their correct conclusion.

This outcome should be considered extremely fortunate for the Laboratory in that both tests can be interpreted correctly; however, this is not the ideal mechanism. As detailed in the corrective action plan, new lots of acetaldehyde, vanillin and glycerin have been ordered and will be verified and placed into service.

Included with this supplement is the chromatographic data from the instrumental analysis of the expired acetaldehyde, vanillin and glycerin. In summary, this supplement has addressed the chemical composition of the expired chemicals and why after being used in casework testing – the correct chemical reactions were observed.



Derek Sanders
Laboratory Director