

# Background



- In anticipation of proposed legislation to ban the sale of flavored e-cigarette liquids, users may begin to stockpile large volumes of flavored products.
- This is concerning because over time, the flavoring chemicals could form other chemicals with unknown health effects.
- Aging may occur from oxidation, hydrolysis, or photolysis, depending on the storage conditions of the e-cigarette liquids.







Oxidation

Hydrolysis

Photolysis

## Purpose

- The purpose of this study was to measure the stability of 20 chemical additives over one year under three different storage conditions:
  - Ambient room temperature light
  - Ambient room temperature dark
  - 4 °C dark
- The results of common additives Vanillin and Benzaldehyde are presented here.
- This study also aimed to tentatively identify potential chemical reaction byproducts in Vanillin and Benzaldehyde reference solutions.





- the reference solutions.

# **Stability of Flavoring Chemical Compounds in Flavored Nicotine Solutions Used in E-Cigarette Liquids**

commercial Blu e-cigarette liquids decreased in concentration over the span of one year. Ambient light condition yielded the quickest losses in both the Blu e-cigarette liquids and

• Commercial e-cigarette liquids are unstable and are likely producing chemical byproducts. Benzoic Acid, a known byproduct of benzaldehyde and precursor to genotoxic benzene formation, was found with increasing concentration over 12 months.

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- byproducts that were not detected initially but increased over 12 months in aged solutions.
- Understand the effects of aged e-cigarette liquids in cell exposures compared to newly prepared ecigarette liquids.

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Color range -20.4 0 10.2 20.4 Condition 0 month [1 month] [12 month] [3 month] [6 month]

Graphs were prepared using Agilent Mass Profiler Professional (MPP) software Data was baselined to median peak area and filtered by 2-fold change.

- The parent compound and potential byproduct identified in ambient room temperature light
- The changes in functional groups highlighted show various processes taken place, like oxidation.

## Disclosures