

Analisis benzena dalam minuman ringan yang mengandung asam benzoat, asam sitrat dan vitamin C yang telah dipaparkan sinar matahari secara kromatografi gas

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Abstrak

Benzene is a carcinogenic organic chemical compound and it can cause leukemia to human. International Agency for Research on Cancer (IARC) classifies benzene as Group 1 which is carcinogenic in human. The mechanism of benzene formation in soft drinks is a result from decarboxylation of benzoic acid by hydroxy radicals. Heating can accelerate benzene formation.

Oleh karena itu perlu dilakukan penelitian untuk mengetahui kadar benzena yang terbentuk dalam minuman ringan yang mengandung asam benzoat, asam sitrat dan vitamin C yang telah dipaparkan sinar matahari selama 2 minggu. Analisis pembentukan benzena dilakukan dengan kromatografi gas detektor ionisasi nyala, dengan suhu injektor, dan detektor berturut-turut 200°C, 230°C; suhu awal kolom 60°C sampai 120°C dengan kecepatan kenaikan suhu 3°C/menit dan laju alir gas pembawa 1,5 mL/menit. Kadar benzena dalam sampel A sebesar 7,66 bpm; sampel B sebesar 12,55 bpm dan sampel C sebesar 12,97 bpm. Kadar benzena dalam sampel A masih dibawah jumlah maksimum yang diijinkan WHO sedangkan pada sampel B dan C berada diatas jumlah maksimum yang diijinkan WHO yaitu 10 bpm.

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Therefore, it is necessary to determine the level of benzene that forms in soft drinks which contains benzoic acid, citric acid and vitamin C which has exposed to the sunlight for 2 weeks. Analysis of benzene formation was done by gas chromatography flame ionization detector, a temperature of injector, and detector with 200°C, 230°C respectively; first column temperature was 60°C to 120°C with speed increase from 30°C/minute, and flow rate of 1.5 ml/minute. Levels of benzene formed in sample A was 7.66 ppb; sample B was 12.55 ppb and sample C was 12.97 ppb. Level of benzene in the sample A was below the maximum level allowed by WHO requirement while in sample B and C were above the maximum level allowed by WHO which is 10 ppb.