

1. Please translate the following paragraphs into Chinese.

(1) The toxic effects of organotin compounds in the environment have been well documented and have led to extensive research into analytical methodologies for their determination in a variety of matrices. Organotin analysis has traditionally been performed by chromatographic separation (gas chromatography (GC) or high performance liquid chromatography (HPLC)) coupled to a variety of detectors. GC separations enable the analysis of many different groups of organotin compounds (for example, butyl-, phenyl-, octyl-, and propyl-) in a single analysis after derivatization. However, derivatization is time-consuming and yields may vary between species and in terms of efficiency depending on matrix components. GC-inductively coupled plasma mass spectrometer (ICP-MS) has the potential to facilitate simultaneous multielemental speciation analysis, because species of Se, Pb, Hg, and Sn have volatile forms and could be analyzed in a single analysis. Organotin separations by HPLC offer the advantage that derivatization is not required, which eliminates a potential source of uncertainty in the final result and can reduce analysis time significantly. However, the range of compounds that can be analyzed in a single run are limited compared to GC. The use of ICP-MS as a detector enables calibration by isotope dilution mass spectrometry as well as providing very low limits of detection (pg-ng range). In conjunction with isotopically labeled organotin species, this approach offers many advantages from an analytical point of view including reduced measurement uncertainties and greater precision compared to external calibration methods. (25%)

(2) You normally take in small amounts of arsenic in the air you breathe, the water you drink, and the food you eat. Of these, food is usually the largest source of arsenic. The predominant dietary source of arsenic is seafood, followed by rice/rice cereal, mushrooms, and poultry. While seafood contains the greatest amounts of arsenic, for fish and shellfish, this is mostly in an organic form of arsenic called arsenobetaine that is much less harmful. Some seaweeds may contain arsenic in inorganic forms that may be more harmful. Children are likely to eat small amounts of dust or soil each day, so this is another way they may be exposed to arsenic. The total amount of arsenic you take in from these sources is generally about 50 micrograms (1 microgram equals one-millionth of a gram) each day. The level of inorganic arsenic (the form of most concern) you take in from these sources is generally about 3.5 microgram/day. Children may be exposed to small amounts of arsenic from hand-to-mouth activities from playing on play structures or decks constructed out of copper chromated arsenate (CCA)-treated wood. The potential exposure that children may receive from playing in play structures constructed from CCA-treated wood is generally smaller than that they would receive from food and water. (25%)

(3) The drug nitrous oxide, more commonly known as laughing gas or whippits, is used legally as an anesthetic and to reduce patients' anxiety at the dentist's office, but it is also sold in small cartridges that are intended for use in making whipped cream. These containers can easily be misused by people seeking a high. Although addiction to nitrous is uncommon, its abuse can have serious consequences. People who use a lot can appear to have something like a seizure. A nitrous oxide addict's face and teeth clenches, and his/her muscle has contractions that can appear like a seizure. While nitrous addiction is rare overall, it can be an occupational hazard for dentists and anesthesiologists who have access to it. At your dentist's office, the drug is mixed with oxygen when it is delivered through a mask, but when people inhale it

from a balloon or a whipped-cream canister at home, it doesn't allow enough oxygen to get to the brain. The biggest danger from whippits is that when you are not using nitrous with oxygen, you can be in a hypoxic state. If severe hypoxia continues for more than a few minutes, it can lead to brain damage or even death. (20%)

2. Please answer the questions in Chinese after reading the following paragraphs.

Eating large amounts of fried food has been linked with heart disease risk factors such as high blood pressure, lowered "good" cholesterol, and obesity, the researchers write. However, research on fried food and heart disease itself has produced conflicting results.

The Spanish researchers evaluated 40,757 adults, ages 29 to 69 and free of heart disease when they enrolled in the study in 1992 through 1996. The researchers followed them until 2004. The researchers interviewed the men and women at the start of the study about their usual eating habits. They asked them what they'd eaten in a typical week during the previous year. The questionnaire included up to 662 different foods, including 212 that were fried. Frying methods included deep-fried, pan, battered, crumbed, or sautéed. Most used heart-healthy olive oil.

The researchers separated participants into four groups, depending on their intake of fried foods. The lowest group ate about 1.6 ounces (2.8 grams) of fried foods a day. The group with the highest intake had about 8.8 ounces (250 grams) a day. On average, the men and women ate a little less than 5 ounces (142 grams) a day of fried foods and used about a half-ounce of oil to fry it. Fried food was about 7% of all food eaten.

During the follow up, 606 heart attacks and other heart "events" occurred, and 1,135 deaths occurred from all causes. When the researchers looked at the heart disease and deaths, they found no link between fried food, whatever the intake, and heart disease or death from any cause (published in BMJ on Jan. 31, 2012).

Questions

- (a) How long has this study taken? How many subjects have involved? And, what is the percentage of heart attacks occurred in this study? (9%)
- (b) What type oil is the most used? And, what are the ways to be used? (6%)
- (c) Can you conclude to "Eating foods fried in healthier oil not linked to heart disease"? Why or Why not? Please provide 3 reasons at least. (15%)

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