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Spinach

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Spinach

Ever wonder why spinach is supposed to be so good for you? Popeye will tell you it's the presence of healthy quantities of iron. But did you know that every gram of spinach also contains manganese, strontium, zinc, uranium and europium — in fact, at least 27 trace elements?

Uranium and europium? That's right — tiny, tiny amounts to be sure, but they're there all the same. The news comes from scientists at the National Bureau of Standards who have developed a "standard spinach" in which the concentrations of 27 trace elements have been carefully determined.

The standard, technically called Standard Reference Material for Trace Elements in Spinach, was developed for the Food and Drug Administration. FDA is using it to calibrate instruments that test for toxic substances present in minute quantities in fruits and vegetables. These tests are conducted regularly at FDA field stations across the nation in sample "market basket" surveys of fruits and vegetables. Based on the results, produce containing too much of the toxic elements is barred from the marketplace.

Of trace elements present in foods, a number have been identified as essential to good nutrition — such as iron, copper, chromium, cobalt and zinc. Still others have been identified as harmful contaminants. Arsenic, mercury, lead and uranium fall into this category. The role of most other trace elements such as strontium, rubidium and manganese has yet to be determined.

In recent years, questions have been raised about contamination of fruits and vegetables grown near sources of urban pollution. Spinach, lettuce and other leafy vegetables grown near highways are reported to acquire potentially harmful metals that are difficult to remove by washing.

To determine whether foodstuffs are contaminated, scientists must painstakingly analyze thousands of samples of food grown at various locations in both clean and polluted environments. The NBS standard spinach is used as a reference to assure accurate analyses.

To make the standard, NBS used more than 9 metric tons of commercially-grown spinach. The spinach was freeze-dried to a weight of 585 kilograms, ground, blended, homogenized and carefully analyzed using nine of the most complex and sophisticated analytical methods available. Nearly two dozen scientists in the NBS Institute for Materials Research were involved in developing the Standard Reference Material.

It took 18 months to complete the standard, which is the second botanical standard that NBS has developed for trace-element analysis. The first was orchard leaves. Standards for tomato leaves and pine needles are also available.

So the next time someone tells you to eat your spinach, you can tell them what's in it. Here's the complete list of 27 elements: potassium, calcium, phosphorus, aluminum, iron, manganese, strontium, zinc, rubidium, copper, chromium, lead, arsenic, thorium, uranium, mercury, nitrogen, bromine, boron, nickel, cadmium, cobalt, lanthanum, scandium, antimony, thallium and europium. And, of course, spinach also contain the basic building blocks present in all organic substances — hydrogen, carbon and oxygen.

Bon appetit!

Arizona Science Teachers Association Journal 1982 Vol. 4(2):5.

1983 NSTA Convention

“Student, Teacher, Society: Accepting the Challenge” is the theme of the National Science Teachers Association area convention in Biloxi, Mississippi December 1-3, 1983.

The program committee is attempting to involve science educators (elementary through university) who would like to share their expertise. The committee is searching for presenters for contributed papers, panels and workshops.

Persons interested in participating should have requested a proposal form by January 1, 1983. However, you may still wish to contact the committee at this address:

Donald R. Cotten
Southern Station Box 8414
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Hattiesburg, Mississippi 39406

Hawkeye Science Fair

The 25th annual Hawkeye Science Fair will be held April 8 and 9 at the Valley West Mall, West Des Moines, Iowa. The awards program will be Saturday evening.