Please translate the following paragraphs into Chinese.

1. X-ray fluorescence (XRF) spectrometry is a spectrometric method that is based on the detection of X-ray radiation that is emitted from the sample being analyzed. XRF is a two-step process that begins with a focused X-ray beam striking the sample. The incident X-ray strikes an inner shell electron in the sample atoms, which causes the electron to be ejected like a pool ball being struck by the cue ball. The lowest electron shell is the "K' shell. The second lowest is the "L" shell and the next the "M" shell. The vacancy caused by the loss of emitted electron is filled by an outer-shell electron that drops to the lower level. Because the outer-shell electron is at higher energy, when it drops to the lower level, it loses excess energy by releasing a photon of electromagnetic radiation. The fluorescent photon has an energy that is equal to the difference between the two electron energy levels. The photon energies are designated as K, L, or M X-rays, depending on the energy level filled; for example, a K shell vacancy filled by an L level electron results in the emission of a Kα X-ray. Because the difference in energy between the two electron levels is always the same, an element in a sample can be identified by measuring the energy of the emitted photon (or photons if there is more than one electron emitted). The intensity of the emitted photon is also directly proportional to the concentration of the element emitting the photon in the sample. The XRF instrument measures the photon to measures the amount of the element in the sample. Because this technique measures energy differences from inner shell electrons, it is insensitive to how the element (being measured) is bonded. The bonding shell electrons are not involved in the XRF process. XRF will not detect every element; the elemental range is limited to elements larger than beryllium, and the detection of low atomic number ($Z < 11$, Na) elements is difficult. (25%)

2. Thousands of different organic chemicals are synthesized each year for use as insecticides, herbicides, detergents, and insulating materials, and for many other purposes. Some of them are not adequately tested for toxicity before being put on the market. Many of these chemicals persist in the environment for long periods of time, and if they enter waterways, they can cause serious health and environmental problems. There is growing concern that these persistent organic pollutants (POPs) may be acting as hormone disrupters. POPs also are suspected of causing neurologic disorders, suppressing the immune system, and increasing the risk of cancer. Because they can be transported by wind and water, most POPs generated in one country can affect people and wildlife far from where they are used. They are very stable molecules and persist for long periods in the environment and can accumulate and pass from one species to the next through the food chain. To address this concern,

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a conference was held in Stockholm, Sweden, in May 2001. A treaty, known as the Stockholm Convention, was signed by more than 90 countries that promised to reduce or eliminate the production, use, and release of 12 key POPs, which are known as "the dirty dozen". Most of the 12 key POPs are no longer produced in the United States. Although most developed nations have taken strong action to control the dirty dozen, a great number of developing nations have only recently begun to restrict their production, use, and release. Of the chemicals, 10 were intentionally produced by industry, and 9 were produced as insecticides or fungicides. Only 2 of the 12 chemicals, dioxins and furans, are unintentionally produced in combustion processes. (25%)

3. Celiac disease occurs in the digestive system when people cannot tolerate gluten, a protein in wheat, barley, rye and spelt. The disease is characterized by an inflammatory response to gluten-containing products. The researchers said that currently, cereal baked goods are manufactured by fast processes. Because of this traditional long fermentation by sourdough – a cocktail of acidifying and proteolytic lactic acid bacteria – has been replaced by chemical and baker's yeast leavening agents. Under these conditions, cereal components are not degraded during manufacture. Previous research has shown that the manufacture of wheat and rye breads or pasta with durum flours by using selected sourdough lactobacilli markedly decreased the toxicity of gluten. The new study evaluated the safety of a daily administration to celiac disease patients (for 60 days) of goods made of wheat flour hydrolyzed during food processing by a mixture of selected sourdough lactobacilli and fungal proteases. (25%)

4. The neutral monosaccharide composition of cell walls can be determined by first hydrolysing the polysaccharides to their constituent monosaccharides with strong acid and then converting them to alditol acetates by reduction with sodium borohydride to the corresponding alditol, followed by acetylation of the hydroxyls on each alditol. The resultant alditol acetates are volatile and can be identified and quantified by gas chromatography. The amounts of the individual monosaccharides in the cell walls can be determined and then summed to give the total neutral sugar content. Determination of the monosaccharide composition by gas chromatography of alditol acetates is commonly used for cell wall analyses because the procedure gives a single peak for each sugar. Alditol acetates are relatively more stable and could be rerun on the gas chromatograph the following day if required. While this procedure does not identify the parent polysaccharides, some inferences can be made since the types of polysaccharides in cell walls are well known. (25%)

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