selectively quantified using the sharp spectral features even for large molecules.

Supersonic jet spectrometry has distinct advantages over other low-temperature spectrometries, in that it can be combined with gas phase separation and detection techniques such as chromatography or mass spectrometry. Therefore, this spectrometric technique can be used as a versatile analytical means, not only for basic research on single standard molecules but also for practical trace analysis of chemical species in multicomponent samples (e.g., in biological monitoring or in environmental monitoring).

In this critical assessment basic operational principles and analytical instrumentation are introduced in addition to various applications to polycyclic aromatic hydrocarbons, polymer decomposition products, and chemically hazardous compounds such as dioxins. Several approaches for assignment of the chemical species are also provided, which involve the use of the data of the 0-0 transition for ca. 300 organic compounds and of the theoretical techniques using molecular orbital calculation and fuzzy recognition of the spectral feature.

www.iupac.org/publications/pac/2003/7507/7507x0975.html

Significance of Impurities in the Safety Evaluation of Crop Protection Products

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Humans can be exposed to pesticides and their impurities through direct handling, re-entry of treated areas, contact with environmental residues, and dietary intake.

Technical pesticides, in addition to the "pure active ingredient," also may contain complex mixtures of other minor chemical components due to process variables, side reactions, and impurities in starting materials. The impurities may contribute to the toxicity of the pesticide or may alter the physical properties of the product. For some impurities this may lead to the allocation of maximum concentration limits in technical grade products.

The toxicological tests carried out with technical products of typical composition for registration purposes include assessment of toxic potency of the impurities present in the test material. However, the composition of the technical product may vary, particularly with respect to impurities and potentially also the toxicity of the product, depending on the manufacturing process and sources of starting materials. The use of various adjuvants and carrier materials in the preparation of the formulation may also result in marked differences in storage stability of formulations. This is especially of concern in the case of generic pesticides, which may be produced and formulated by many manufacturers under widely varying conditions, with different materials, and under a range of quality control standards.

Because of the confidential nature of the information on impurities in technical pesticides, this report cannot provide comprehensive coverage of the extremely diverse subject. Rather, published examples are given to illustrate possible scenarios and support the conclusions and recommendations made This report is aimed at improving the safety assessment of crop protection products by focusing on the nature and effects of certain impurities. Recommendations are provided to government authorities considering the establishment or revision of their pesticide registration and compliance programs to ensure the safe and efficient use of pesticides. Guidance is also given for the correct assessment of impurities in technical grade and formulated pesticide products based on the technical documentation provided by the manufacturer, appropriate utilization of FAO Specifications of Plant Protection Products, and the toxicological evaluations made by the FAO/WHO Joint Meeting on Pesticide Residues. The importance of regular control of relevant impurities during the manufacturing and formulating processes as well as during storage and handling of marketed products is highlighted.

www.iupac.org/publications/pac/2003/7507/7507x0937.html

Erratum

The equation that appeared on page 27 of the July issue of *CI* was incorrect because the gamma was not on the main line. Following is the correct version:

$$\mathrm{pH} = -\lg a_{\mathrm{H}} = -\lg (m_{\mathrm{H}}\gamma_{\mathrm{H}}/m^{\circ})$$