

Management of Food Safety: How Do We Proceed Today for the Future?

February 28, 2020

Food Safety Risks

- Pathogenic bacteria, viruses and parasites
- Chemical substances (naturally occurring and man-made)
- Allergens



Paracelsus – the father of toxicology

(nee: Philippus Aureolus Theophrastus Bombastus von Hohenheim)

b. 1493 – d. 1541

Originated the dose-response concept

"Sola dosis facit venenum"

"Only the dose makes a poison"

The dose-response concept is now universally recognized but is not always applied to chemical food safety

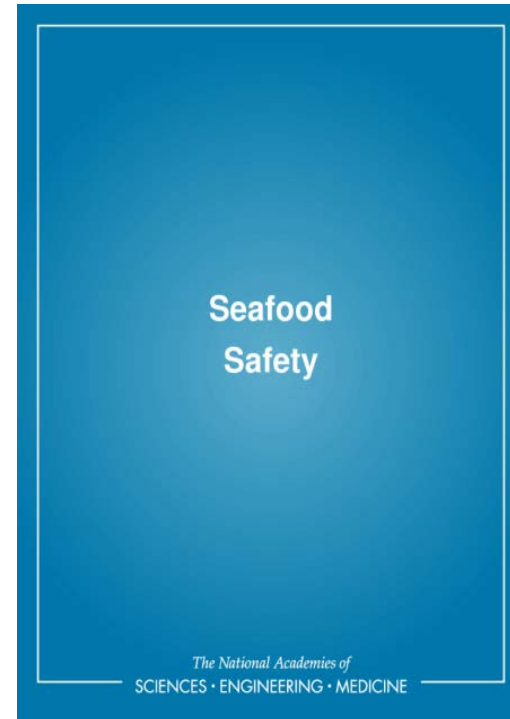
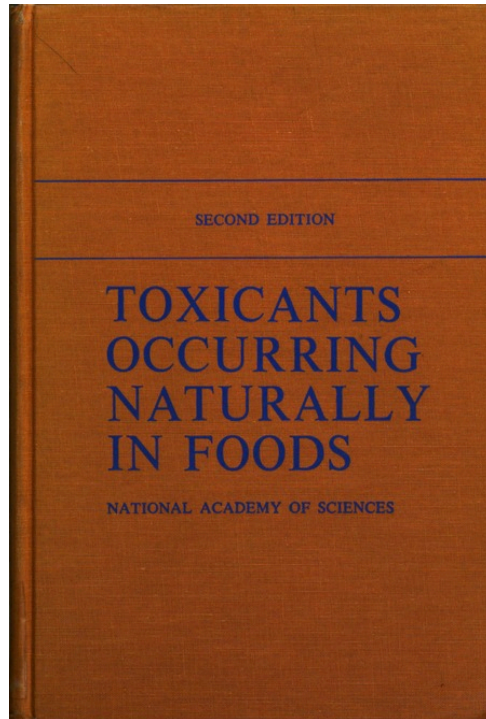
If the dose makes the poison, then safe doses must exist for all chemicals. And, all chemicals are toxic under certain conditions of dose and route of administration. There are no safe chemicals but there are safe doses for all chemicals.

Toxicology – often defined as the science of poisons

But really the science that defines the limits of safety of chemical agents

Chemical Food Safety Risks

- Naturally occurring toxicants
- Naturally occurring contaminants
(e.g. mycotoxins, phycotoxins, botulinum toxins)
- Man-made contaminants (e.g Hg, PCBs)
- Man-made adulterants
(e.g. melamine, Sudan dyes, etc.)
- Food additives
- Allergens and substances inducing metabolic disorders



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REPORT

Finding a Path to Safety in Food Allergy

Assessment of the Global Burden,
Causes, Prevention, Management,
and Public Policy

The Future of Chemical Food Safety

- Novel foods, novel sources, globalization
- Foods as a driver for health (dietary supplements, nutraceuticals, fortified diets)
- Individualized health and nutrition
- Nutrients as toxicants – Paracelsus predicted it
- Nutrients vs. nutraceuticals vs. dietary supplements – toxicity considerations

Chemical Food Safety Regulation – U.S.

“A food shall be deemed to be adulterated (a) (1) if it bears or contains any poisonous or deleterious substance which may render it injurious to health; but in case the substance is not an added substance such food shall not be considered adulterated or (2) (a) if it bears or contains any added poisonous or added deleterious substance (other than one which is (i) a pesticide in or on a raw agricultural commodity, (ii) a food additive, (iii) a color additive; or (iv) a new animal drug which is unsafe---”.

Chemical Food Safety Regulation – U.S.

“---Provided, that no additive shall be deemed to be safe, if it is found to induce cancer when ingested by man or animal, or if it is found, after tests which are appropriate for the evaluation of the safety of food additives, to induce cancer in man or animal---”.

Management of Food Safety: How Do We Proceed Today for the Future? – Chemical Food Safety

- Focus on effects of globalization on exposure
- Serve as a resource for scientific knowledge on novel foods, nutraceuticals, and dietary supplements
- Focus on risk assessment and risk management – health optimization
- Merge nutrition, toxicology, and risk assessment to achieve the best scientific perspectives