



# Risk communication

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# Overview

- **Challenges in risk communication**
- **How to prepare for RC**
- **Key factors to consider in RC**
- **Example**
- **Conclusions**



# Risk communication challenges (1)

## Many consumers

- have zero tolerance for food risks
- are especially sensitive to risks that result from human intervention
  - natural contaminants vs. man-made contaminants and additives
- confuse hazard with risk

# Hazard and risk

The background image is a composite of space-related elements. At the top, a portion of Earth is visible, showing green continents and blue oceans. Below the Earth, there is a large, glowing red and orange area that resembles a comet's tail or a large-scale atmospheric phenomenon. Several asteroids of different sizes and shapes are scattered throughout the scene. One large, grey, cratered asteroid is in the foreground, while others are further away. The background is a dark space filled with numerous small, bright stars.

Hazard = potential to cause harm

Risk = likelihood \* potential

# Risk communication challenges (2): *mistakes from the past*

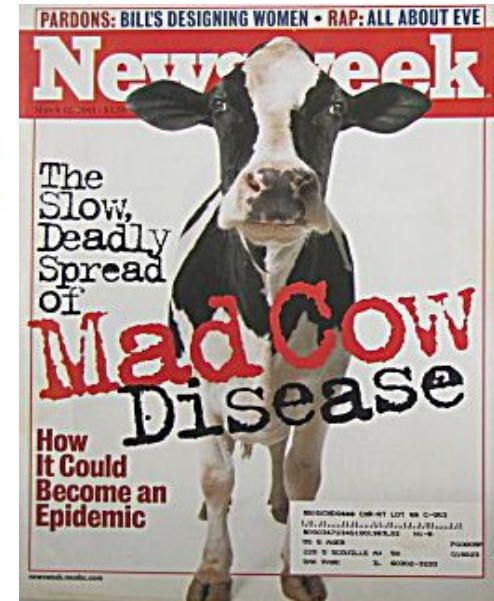
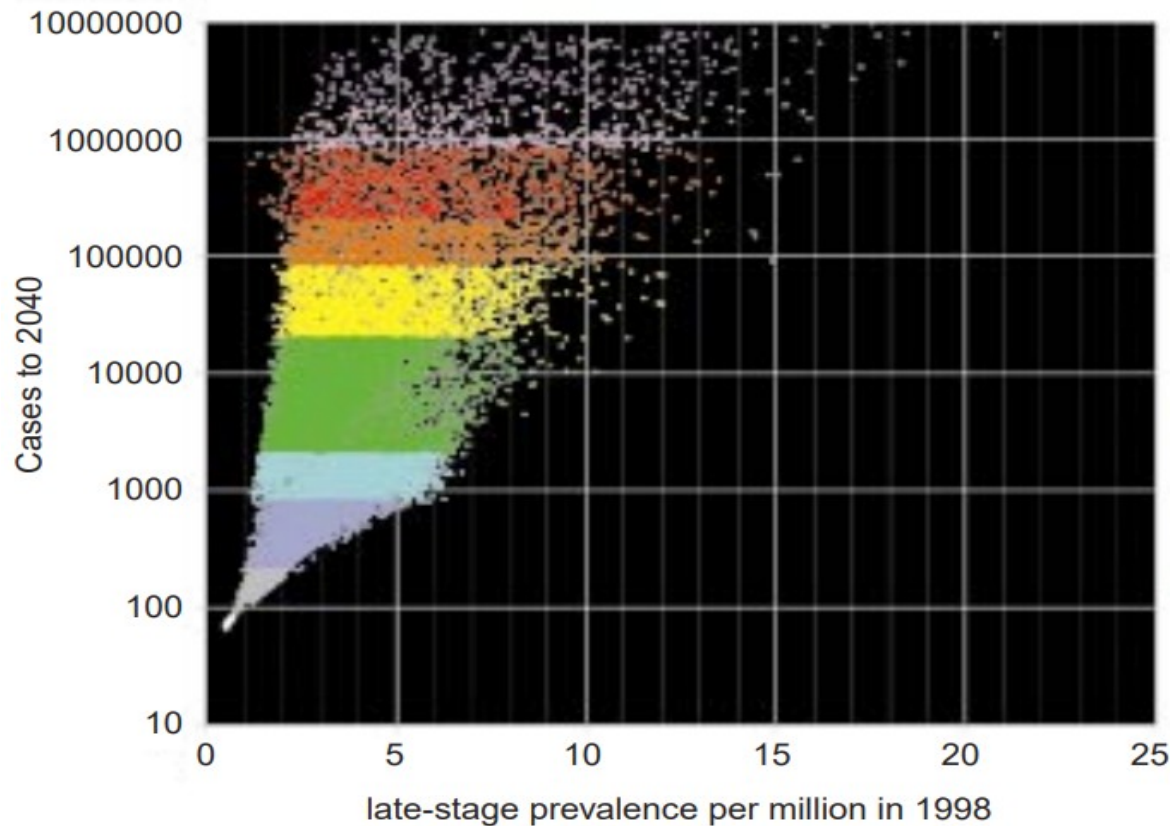
- Bovine spongiform encephalopathy (BSE, 'mad cow disease') first reported in UK in 1986
- peaked in 1993 with almost 1000 new cases / week



# BSE transmission to humans uncertain

Proc. R. Soc. London, 1998

Epidemiological determinants of vCJD epidemic A. C. Ghani and others



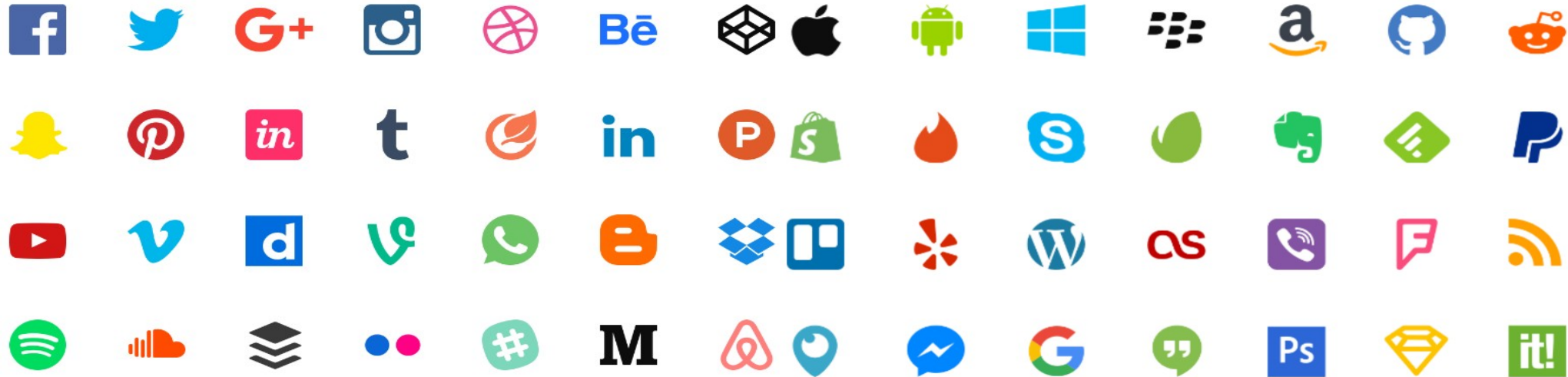
# BSE impact on RA/RM in EU

## COMPONENTS OF RISK ANALYSIS



# Risk communication challenges (3)

- Chaotic media landscape
- Celebrity trumps credibility
- "Post-truth" worldview







**Beat Späth** @BeatSpath · 9 Sep 2017

The rise of #antiscience #witchhunt #posttruth



# Celebrity Foodies: See What the Stars Are Snacking on Today



Take a peek at the plates of Gwyneth Paltrow, Blake Lively, and more stars who are making us hungry.

MADISON ROBERTS  and JESSICA FECTEAU  September 12, 2018 09:10 PM

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## DWAYNE "THE ROCK" JOHNSON



The actor joked about his “exclusive” after party “for 1,” which involved a glass of tequila and a meal of egg whites, oatmeal and blueberries before bed. “I’m so cool. And boring,” he wrote [on Instagram](#).



Dwayne Johnson/Instagram; Inset: Vianney Le Caer/Invision/AP/REX/Shutterstock

# FOOD BABE



HOT ON THE TRAIL TO INVESTIGATE WHAT'S REALLY IN YOUR FOOD!

*Vani Hari*

“There is just no acceptable level of any chemical to ingest, ever,”



**Are you eating harmful food additives?**

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FOOD FOR THOUGHT

## Is The Food Babe A Fearmonger? Scientists Are Speaking Out

"Critics note that Hari **lacks credentials in nutrition or food science**; she's a former consultant who studied computer science. (...) [T]hat lack of training often leads her to **misinterpret peer-reviewed research and technical details about food chemistry, nutrition and health**, says Kevin Folta, a professor of horticultural sciences at the University of Florida"

"So **why do food companies respond to her demands**, if they have nothing to hide?"

Because, [cancer surgeon] Gorski writes, "companies live and die by public perception. **It's far easier to give a blackmailer like Hari what she wants than to try to resist or to counter her propaganda by educating the public.**"

<https://www.npr.org/sections/thesalt/2014/12/04/364745790/food-babe-or-fear-babe-as-activist-s-profile-grows-so-do-her-critics>

# Risk communication challenges (4)

**Chemical analysis technology** – increase in sensitivity

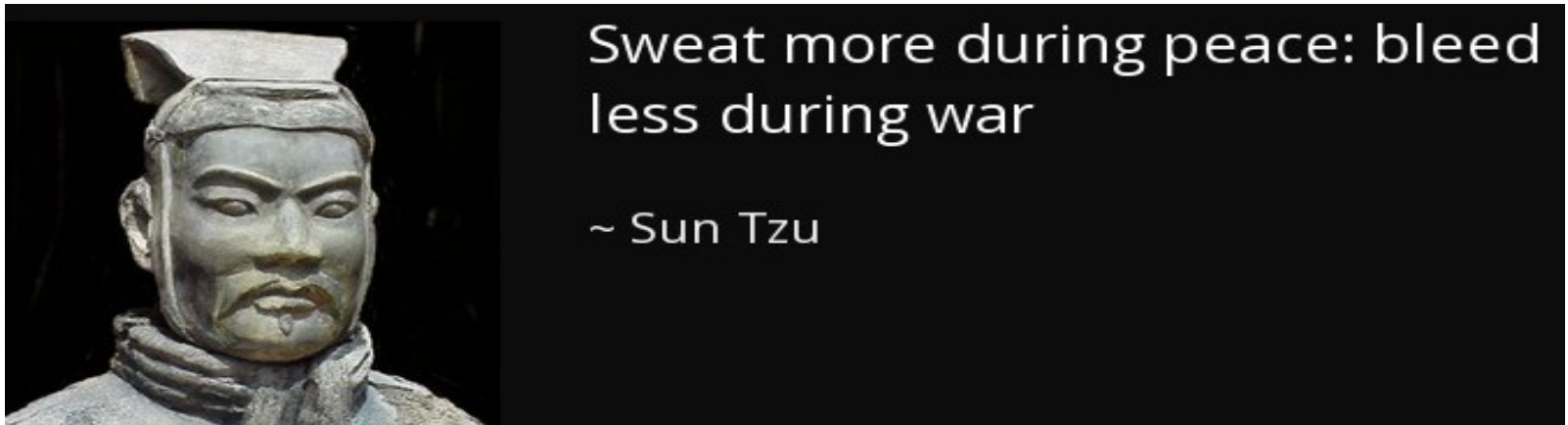
**DNA sequencing technology** – powerful but can be misinterpreted ("bubonic plague in NY subway")

*RA, RM and RC have a hard time keeping up*



# How to prepare for RC (1)

- Should be ongoing, not only in crisis





# How to prepare for RC (2)

- **Raise awareness of proper food production, processing, additives, contaminants**
- **Produce clear factsheets on specific risks**
- **Consider using relative risk instead of absolute risk; compare food risks with other everyday risks, e.g. from traffic**
- **Support integrated risk-benefit assessment whenever possible**
- **Information should be accessible, intelligible, useable and assessable**
- **Demonstrate trustworthiness**



# Collect essential facts

- **Who and what are likely to be affected?**
- **To what extend?**
- **With what consequences?**
- **With what probability?**
- **In what time frame?**
- **Which risk perception factors are involved?**



## FACTORS INFLUENCING RISK PERCEPTION

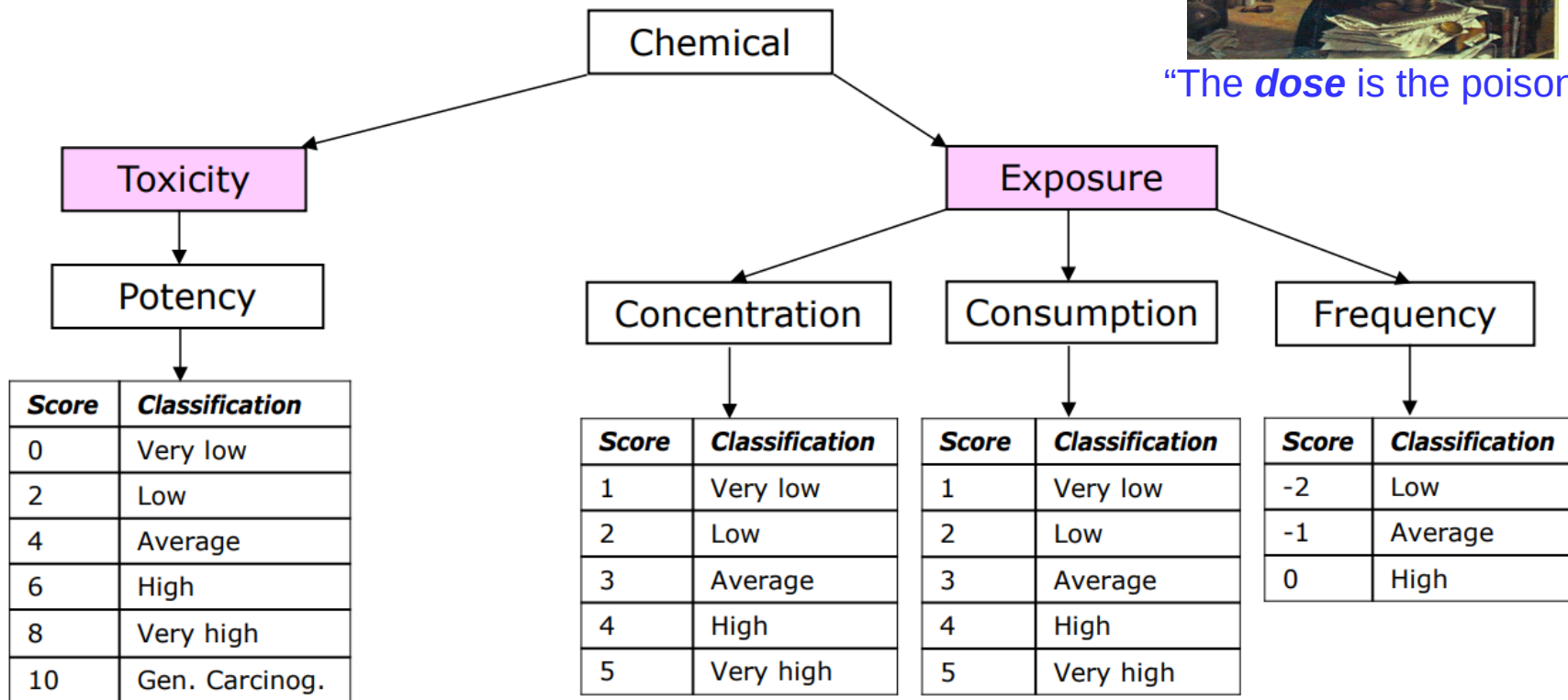
Factor	Increase perceived risk	Decrease perceived risk
Perceived naturalness	Unnatural/human-made	Natural hazard
Perceived controllability	Uncontrollable	Personal controllability
Scientific knowledge	Risks are unknown to science	Risks are known to science
Familiarity	New risk	Familiar risk
Voluntariness of exposure	Involuntary exposure	Choice about exposure
Perceived catastrophic potential	Many people are affected at the same time	People are affected over a greater period of time
Severity of consequences	Severe consequence (regardless of likelihood of occurrence)	Consequences not severe
Immediacy of consequences	Consequences are immediate	Consequences are delayed
Who is affected	Vulnerable people (e.g. children, infants and pregnant women)	Not vulnerable people
Perceived distribution of risks and benefits	Unequal distribution of risks and benefits	Equal distribution of risks and benefits
Ethical and moral concerns	Risk is seen as ethically or morally wrong (e.g. fraudulent acts)	No ethical or moral concerns

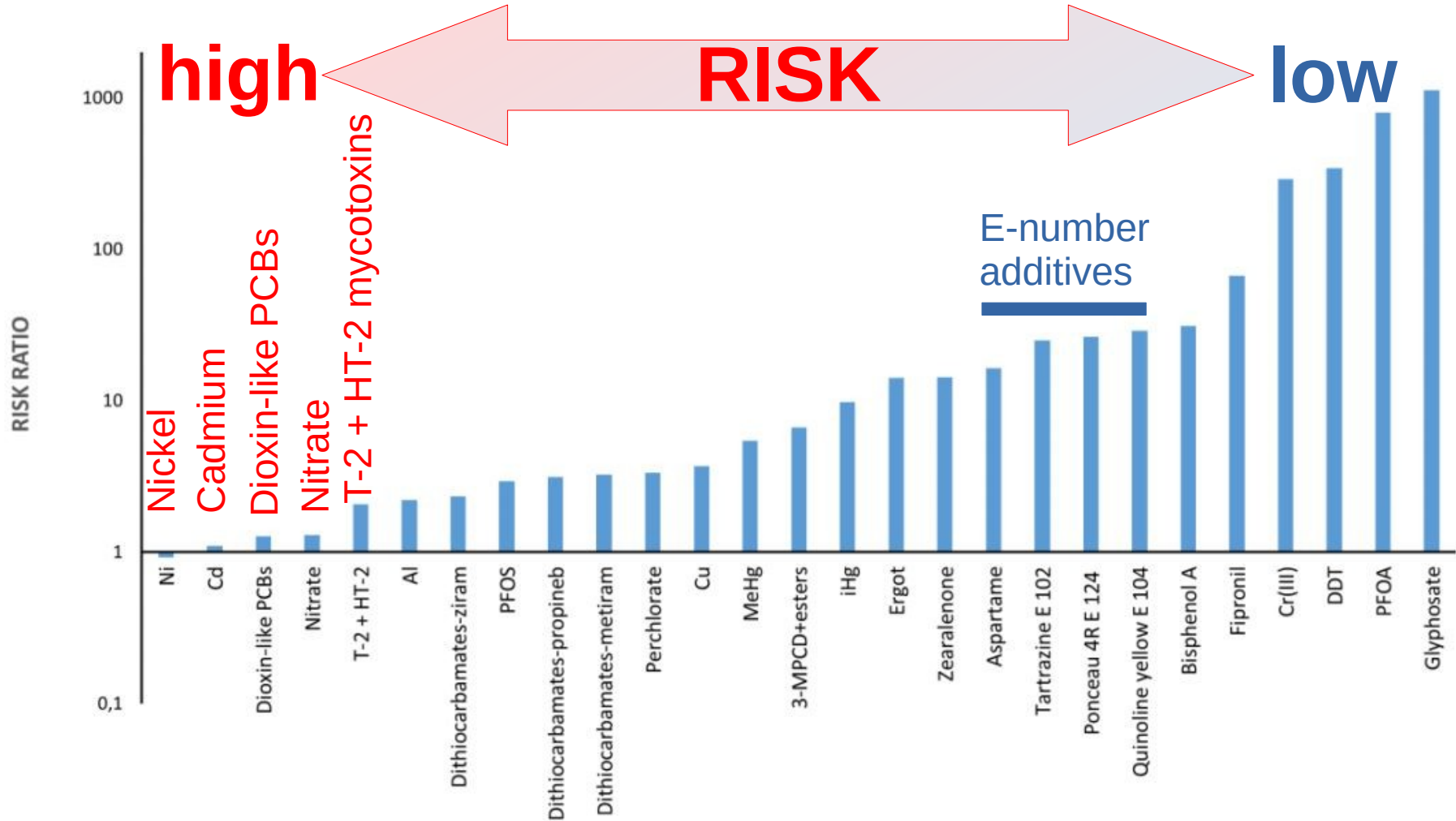
# Risk ranking

(qualitative method)



“The **dose** is the poison”





**Figure 1:** Risk ranking of selected contaminants and regulated substances using the risk ratio, HBGV:exposure. Mean European exposure for adults was applied in the calculations



# Risk may differ between groups

**E.g. fish consumption**

- **risk of heavy metals vs. benefits of omega-3 fats**
- **risk/benefit ratio differs for pregnant women and the general population**
- **risk communication should address different target groups and fish species**





# Example: consumer perceptions on food additives

**Perceived personal benefits** e.g. sweetness w/o calories

**Perceived personal risks** e.g. to health, child development

**Perceived societal benefits** e.g. less food waste

**Perceived societal risks** e.g. environmental

**Fairness of risk/benefit distribution** producer/consumer

**Ethical concerns** e.g. lack of labeling; fraud

**Trust** in regulators, industry and science

# Example: aspartame



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## Aspartame Articles



### Aspartame is, by Far, the Most Dangerous Substance on the Market that is Added To Foods

It hides behind brand names such as NutraSweet, Equal, Spoonful, and Equal-Measure, but its maker... percent of adverse reactions

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## SMARTNEWS *Keeping you current*

### 'Aspartame Causes Cancer' Was a Classic Internet Hoax

[www.scienceconsult.e](http://www.scienceconsult.e) The aspartame myth goes back to a letter circulating on the '90s internet

# 'Scientific' aspartame scares

**EHP** | Environmental Health Perspectives

[Environ Health Perspect.](#) 2007 Sep; 115(9): 1293–1297.

PMCID: PMC1964906

Published online 2007 Jun 13. doi: [10.1289/ehp.10271](https://doi.org/10.1289/ehp.10271)

PMID: [17805418](https://pubmed.ncbi.nlm.nih.gov/17805418/)

Research

## Life-Span Exposure to Low Doses of Aspartame Beginning during Prenatal Life Increases Cancer Effects in Rats

[Morando Soffritti](#), [Fiorella Belpoggi](#), [Eva Tibaldi](#), [Davide Degli Esposti](#), and [Michelina Lauriola](#)

Cesare Maltoni Cancer Research Center, European Ramazzini Foundation of Oncology and Environmental Sciences, Bologna, Italy



# Aspartame RC by regulators 1 (correct, but hardly reassuring)

## Evaluations of the Joint FAO/WHO Expert Committee on Food Additives (JECFA)

### ASPARTAME



#### General Information

Synonyms:	ASPARTYL PHENYLALANINE METHYL ESTER
Chemical Names:	N-L-alpha-ASPARTYL-L-PHENYLALANINE-1-METHYL ESTER; 3-AMINO-N-(alpha-CARBOMETHOXY-PHENETHYL)-SUCCINAMIC ACID
CAS number:	22389-47-0
INS:	951
Functional Class:	Food Additives SWEETENER

#### Evaluations

Evaluation year:	2016
ADI:	0-40 mg/kg bw

# Aspartame RC by regulators 2 (better)

## Food

Home > Food > Ingredients & Packaging > Food Additives & Ingredients

### Food Additives & Ingredients

Overview of Food Ingredients, Additives & Colors

Consumer Information on Additives & Ingredients

Color Additives in Food

Food & Color Additive Petitions

Food Additive Status List

Substances Added to Food (formerly EAFUS)

### Resources for You

- [Ingredients, Additives, GRAS & Packaging Guidance Documents & Regulatory Information](#)

## Additional Information about High-Intensity Sweeteners Permitted for Use in Food in the United States

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[High-Intensity Sweeteners Main Page](#)

High-intensity sweeteners are commonly used as sugar substitutes or sugar alternatives because they are many times sweeter than sugar but contribute only a few to no calories when added to foods. High-intensity sweeteners, like all other ingredients added to food in the United States, must be safe for consumption.

- [Saccharin](#)
- [Aspartame](#)
- [Acesulfame potassium \(Ace-K\)](#)
- [Sucralose](#)
- [Neotame](#)
- [Advantame](#)
- [Steviol glycosides](#)
- [Luo Han Guo fruit extracts](#)

# Aspartame RC by regulators 3 (best)

EFSA explains **the Safety of Aspartame**

## Scientific Opinion on Aspartame

1. What is **aspartame**?
2. What happens to aspartame **after its ingestion**?

3. Is aspartame **safe**?

4. Acceptable **Daily Intake**
5. **Literature** review
6. What happens **next**

**Definitions and attribution**

[https://www.efsa.europa.eu/sites/default/files/corporate\\_publications/files/factsheetaspartame.pdf](https://www.efsa.europa.eu/sites/default/files/corporate_publications/files/factsheetaspartame.pdf)



# RC is interactive

- **Information:** what is the risk, what is being done, what can I do
- **Dialogue:** exchange information and ideas with stakeholders
- **Engagement:** develop policies together with stakeholders



# Stakeholder engagement is key

**"Dialogue with stakeholders** may also provide decision-makers with vital or additional relevant information for risk assessments and/or management, and **increase the likelihood that decisions are fit for purpose"**

**FAO/WHO, <http://www.fao.org/3/a-i5863e.pdf>**

**Stakeholders:**  
**those with a legitimate interest in the topic**



# Conclusions

- **Appropriate risk communication is very important**
- **It starts in 'peace time' with explaining food production and need for processing, demonstrating trustworthiness**
- **Contaminants (natural and man-made) are of greater safety concern than food additives**
- **Especially when in crisis, take perceptions into account**
- **Dialogue with relevant stakeholders is key**