

## Chemical cocktails in our food

Philosopher and Emeritus Professor of the University of Wageningen, Michiel Korthals, claims in his book **Goed eten - Filosofie van voeding en landbouw** [2018] that our food has lost its innocence; and in August, the New York Times published “Our food is killing too many of us”. This creates serious concerns about the safety of our food. Is there poison in it? And indeed the message from the World Health Organization is quite frightening: “... Food safety, nutrition and food security are inextricably linked. Unsafe food creates a vicious cycle of disease and malnutrition, particularly affecting infants, young children, elderly and the sick. Moreover, foodborne diseases impede socioeconomic development by straining health care systems, and harming national economies, tourism and trade...” (<https://www.who.int/news-room/fact-sheets/detail/food-safety>).

Toxicologist and Emeritus Professor of Ghent University, Nick Van Larebeke, goes straight to the heart of the problems facing us here. Particular attention is mostly paid to the individual effects of chemicals and far too little to the synergies that can occur when humans and other animals are exposed to “cocktails” of chemical compounds. Mixtures of chemical contaminants and their harmful cocktail effects: a challenge for the 21st century? The question arises as to whether there is no exaggeration, but many scientific results point to the seriousness of the situation. Already in 2006 – now more than ten years ago – Dr. Koni Grob, of the Kantonales Labor Zurich, had warned that “... The number of substances migrating from food contact materials above the threshold of toxicological concern for genotoxic carcinogens is unknown, but might be about 100.000, i.e. the large majority has not been listed as officially approved...”. His conclusion was probably not the first warning and will certainly not be the last, but it was a conclusion that captured the imagination of many.

The urine, blood and breast milk of humans, contain foreign substances because they were ingested or inhaled. Our exposure to these chemicals cannot be questioned. Nevertheless, given its complexity, maybe the human body is able to neutralise the chemical “rubbish” and eliminate the xenobiotics. In his recent publication **Sicker, Fatter, Poorer** [2019], Leonardo Trasande, paediatrician and environmental expert at the New York University School of Medicine, leaves us in no doubt that exposure to chemicals – very often endocrine disruptors – can have disastrous consequences. They disrupt the hormonal functions of body AND mind and even threaten the health of our children and grandchildren. In other words, this means that today's cocktail effects constitute a heavy mortgage on the future. What kind of planet will we bequeath to our children and what kind of children will populate the planet they inherit from us?

Heavy metals, pesticides, dioxins, parabens, bisphenols, phthalates, polyaromatic hydrocarbons, and so on – and all in the plural form! In 2009, Chemical Abstracts Service had registered the 50 millionth chemical. Obviously, we are talking about very COMPLEX chemical cocktails. This complexity does not make things easier: analysing cocktails and determining their effects is extremely difficult. Moreover, available results are subject to (statistical) uncertainties, and that is precisely where the problem lies. The inherent uncertainties of every piece of scientific work are deviously abused. We are witnessing a painful breakdown in work practices. The “real sound” science is aware of its ignorance and seeks truth in love and not in a power-seeking. But an “unreal sound” science is also being developed, and the latter is a complete sham that is intent on undermining existing knowledge and spreading doubt. In his work, **Golden Holocaust: Origins of the Cigarette Catastrophe and the Case for Abolition** [2012], Robert Proctor, Professor of history of science at Stanford University, speaks of a science that obscures the truth and slows down any action undertaken by the authorities.

This is all heading in the wrong direction. Is science turning against itself? For many years, both real as well as false sound science have been begging for more transparency and accuracy. Both are similar, even though they do not have the same interests. Kathleen Hartnett White, who was nominated by President Trump to lead the Environmental Quality Council, said in a Senate hearing that she believes that “... we need more precise explanations of the human role and the natural role ...”. And while we are waiting for those additional explanations, the whole situation has continued to deteriorate. Yet the same questions keep being raised; what we need is more accurate evidence. Real sound science also strives for more robust and reproducible data and evidence: (1) science must be transparent and (2) the results and methods must be communicated openly. It is the intentions that make all the difference. The former seeks to make science more reliable, reproducible and more robust. The latter soon understood that it could increase uncertainty, create doubt, and undermine scientific discoveries that threatened its own interests.

This conflict must urgently be resolved. It is simply wrong to ignore the truth, cover up the truth, tell lies because truth and justice are traditionally paired concepts. Without truth there can be no justice. It is not acceptable that a company, a multinational, may even consider lying to the consumer. A company may not misrepresent or hide relevant information, lie about the safety of tobacco, pesticides, sweet foods, etc. Lying is here simply immoral.

It is now a matter of do or die for our policymakers. They should use the results of real sound science to protect and improve physical and mental health. They should avoid donning lab coats and leave the real scientific work to those who have been trained to carry out such work. Having to face a proliferation of civilisation diseases is a particularly unpleasant experience [**De Morgen** of August 7, 2019]. Together with other parameters, chemical cocktails play a (huge) role in the current situation.

Something must be done and it must be done NOW! It is already too late for the current government to take vigorous initiatives and make efforts to improve the health of the population. But if the next government does not put public health at the centre of its preoccupations, it will have made a false start.

Nobody knows anyone who enjoys long-term illness!

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Trasande [2019]. Sicker, Fatter, Poorer, Houghton Mifflin Harcourt, Boston, pp. 245

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