

BfR develops a new dietary intake model for the German population aged 14 to 80 years in order to calculate the intake of pesticide residues in food

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For the dietary risk assessment of pesticide residues the Federal Institute for Risk Assessment (BfR) developed a new model for the estimation of the long- and short-term intake. The new model complements the "VELS model" [1] which has been published by BfR already in 2005 and which includes representative consumption data for German children aged 2 to under 5 years. This especially vulnerable subgroup was considered as being representative of the German population.

With the German Nutrition Survey II (NVS II), which has been conducted in 2006, additional data became available. They provide comprehensive and representative information on the consumption habits of the German population aged 14 to 80 years. These new consumption data are more up-to-date than the VELS data and include also food items which are only rarely consumed by children. The new "NVS II model" allows specific dietary risk assessments for the adult German population

1 Basis of the „NVS II model“

The BfR funded a project which was realized in collaboration with the University of Paderborn [2]. In this project, data from the German Nutrition Survey II (NVS II) were prepared for utilisation in the dietary risk assessment of pesticide residues. Transfer factors were derived to refer all food items reported in the NVS II back to their underlying raw agricultural commodities. These transfer factors consider commercial recipes as well as the influence of food processing itself (e.g. cooking or juicing). In the end, all reported food items were referred back to the raw agricultural commodities (RACs) as defined in Annex I of Regulation (EC) No 396/2005. They are the basis for setting and monitoring maximum residue levels of pesticides in the European Union. Consumed portions for each RAC have been derived by adding the re-calculated contributions from different food items eaten within 24h on individual level. Hence the results from supervised residue trials as well as the findings from monitoring and surveillance programs may be directly put into the new model in order to calculate the consumer exposure during 24 h and to estimate acute and chronic risks for consumers.

The new NVS II model includes equivalents of consumed portions for both the whole German population (female and male, 14-80 years) and the vulnerable sub-population of women in childbearing age (female, 14-50 years). Furthermore, a correlation with the body weight was made on individual level, allowing consideration of the intra-individual variability of the data.

2 Access to the „NVS II model“ and additional documentation

The Federal Institute for Risk Assessment (BfR) now provides on its webpage a pdf file in English language documenting the model parameters and the underlying calculations. In addition EXCEL spreadsheets are provided in English and German language, which include both the new NVS II model and the existing VELS model thus allowing simultaneous calculations of the long- and short-term exposure with both models (<http://www.bfr.bund.de/cm/349/bfr-model-for-pesticide-residue-intake-calculations-nvs2.zip>).

NVS2-Model_V0-9_2_DE.xls
NVS2-Model_V0-9_2_EN.xls

NVS2-Model-Documentation.pdf

3 References

[1]

http://www.bfr.bund.de/cm/349/bfr_develops_new_dietary_intake_model_for_children.pdf

[2] Ptok, S., Hesecker H. (2010), Aufbereitung von Verzehrsdaten der NVS II für die Risikobewertung von Pflanzenschutzmittelrückständen, Institut für Ernährung, Konsum und Gesundheit, Department Sport & Gesundheit, Fakultät für Naturwissenschaften, Universität Paderborn, Projektbericht, not published