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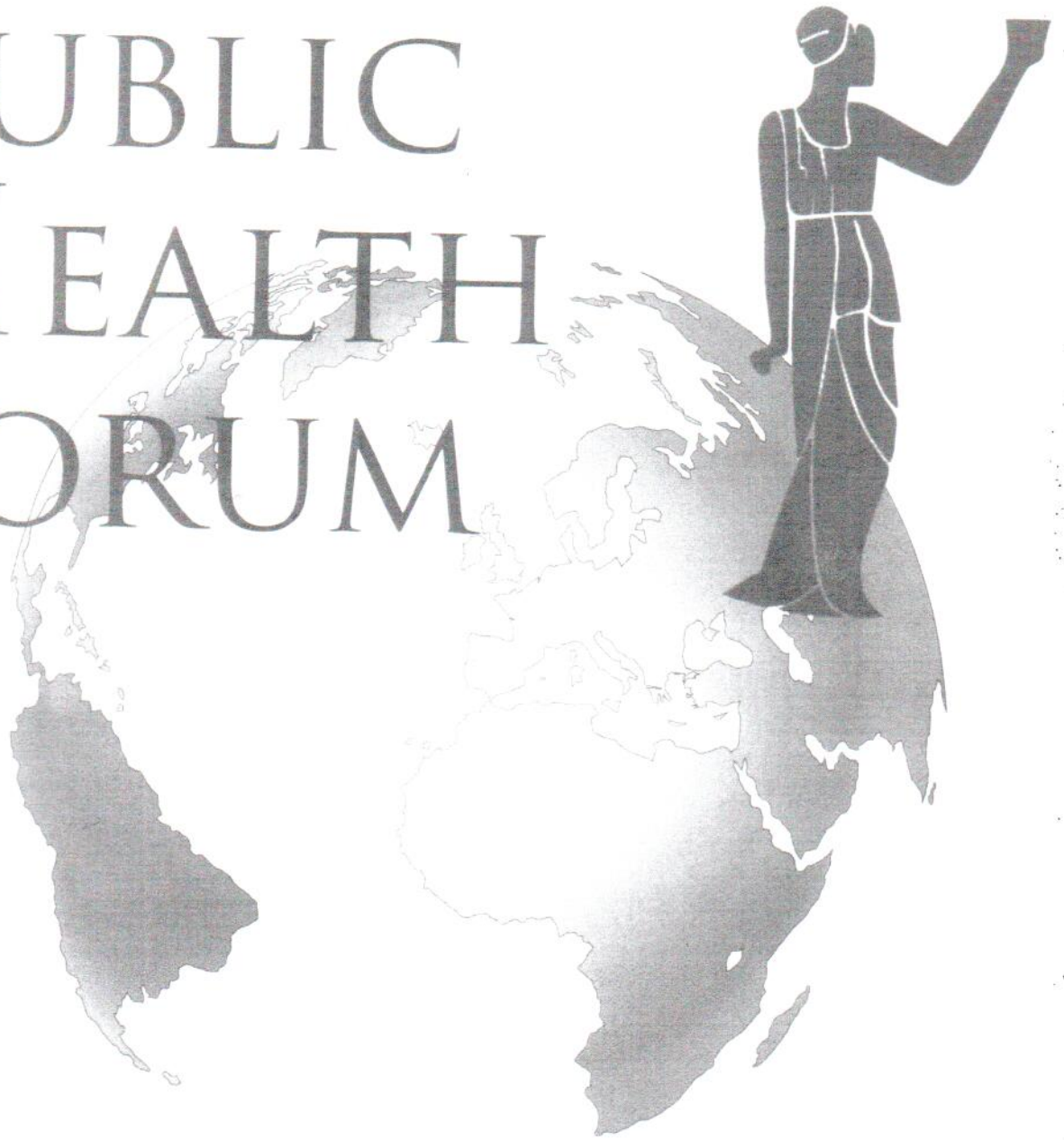

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RISK EVALUATION OF THE TRANSCUTANEOUS ACTION OF PESTICIDES USING THE CONCEPT OF TWO-LAYER SKIN MODELS

Yastrub T.O., Kirsenko V.V.

STATE INSTITUTION "KUNDIIEV INSTITUTE OF OCCUPATIONAL HEALTH OF THE NATIONAL ACADEMY OF MEDICAL SCIENCES OF UKRAINE", KYIV, UKRAINE

Introduction: Dermal absorption testing using standard OECD experimental procedures is a mandatory step in testing the active substance of a pesticide for its registration and use. However, the lack of proved methodological approaches to the use of quantitative characteristics of dermal absorption makes it impossible to obtain accurate results of risk assessment and sound management decisions. Special advances in mathematical modeling of the penetration of chemicals through the skin (Fick diffusion theory, Abraham solubility theory, Potts and Guy model, two-layer skin structure model Cleek and Bunge) should be emphasized. Using these models, you can accurately calculate the dose absorbed through the skin.

The aim: To determine and evaluate the dermal absorption of pesticides using the model of a two-layer skin structure Cleek and Bunge.

Material and Methods: Analytical review of scientific publications on the theory of diffusion of chemicals through biological membranes, mathematical model method.

Review: The parameters of the Cleek and Bunge equation system for 89 pesticides registered in Ukraine were calculated. Their absorbed doses under real exposure conditions were determined. The role of the partition coefficient in two immiscible ambiences (Octanol – Water) in determining the absorbed dose at the stage of pesticide transition into the internal environment of the organism is shown.

Conclusion: The implementation of mathematical model risk assessment in exposure models as a highly reliable, humane, animal-based method for quantifying the absorbed pesticide dermal dose will contribute to objective risk assessment and sound management decisions.

SŁOWA KLUCZOWE: pestycyd, absorpcja przez skórę, metoda modelu matematycznego

KEY WORDS: pesticide, dermal absorption, mathematical model method

THE PROBLEMS OF DEVELOPMENT OF METHODOLOGICAL APPROACHES ON ASSESSMENT OF COMBINED INFLUENCE RISK OF MULTIPLIED PESTICIDES THROUGH THEIR ADMISSION TO THE HUMAN BODY WITH FOOD PRODUCTS

Yastrub A., Omelchuk S.

HYGIENE AND ECOLOGY DEPARTMENT № 4, BOGOMOLETS NATIONAL MEDICAL UNIVERSITY, KYIV, UKRAINE

Introduction: The occurrence of numerous pesticides residues in food products concerns the general public. It is known that the toxic properties of pesticides with the same type of biological action can be summed up (additive effect) or amplified (synergic effect) with a combined effect on humans.

The aim of the work is substantiation of methodological approaches to the risk assessment of the combined effect of multiplied pesticides through admission to the human body with food products.

Material and methods: Analytical research of scientific information and methods of statistical analysis.

Review: The range of pesticides approved for use in Ukraine in modern apple orchard protection systems, of which 110 are insecticides and 88 fungicides, has been investigated. These are substances of different chemical classes, including organophosphorus compounds and carbamates, which are characterized by the same type of biological action and therefore the possibility of manifesting an additive effect when combined with the human body with apples.

Conclusion: The above allows consider the quantitative risk assessment of additive or synergic effect of different combinations of active substances of pesticides through their admission to the body with food products an important problem of hygienic regulating of pesticides.

SŁOWA KLUCZOWE: połączony wpływ, pomnożone pestycydy, efekt addytywny, efekt synergiczny

KEY WORDS: combined influence, multiplied pesticides, additive effect, synergic effect