

## 基于RICEWQ-EXAMS模型的东苕溪流域稻田用药的水生生态及健康风险评价

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## Aquatic Ecor-Risk and Health Risk Assessment of Application of Pesticide in Rice Paddy in Dongtiaoqi Watershed Based on Modified RICEWQ-EXAMS Model

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摘要

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摘要 构建了东苕溪流域水稻地表水暴露场景,对国外已广泛应用的稻田地表水暴露评价模型(RICEWQ-EX-AMS)进行二次开发,并应用构建的场景和开发的模型对东苕溪流域稻田常用农药品种进行水生生态风险评价和健康风险评价。结果表明,在所评价的10种东苕溪流域常用农药品种中,除草剂氟乐灵对藻具有急性高风险,杀虫剂硫丹对鱼既具有急性高风险,又具有慢性风险,阿维菌素对螺具有急性高风险,氟铃脲对螺既具有急性高风险,又具有慢性风险,其余品种对鱼、螺和藻的急慢性风险均较低。运用传统评价法和风险评价模型计算法得出了相一致的结论,即所评价的10个农药品种对人体健康均无风险,该评价结果与所评价农药的实际风险表现较吻合。认为所构建的场景、模型能较好地用于东苕溪流域稻田农药品种的风险评价。

关键词: 东苕溪 稻田 农药 风险评价 模型 场景

Abstract: The scenario of exposure of paddy fields and surface water in Dongtiaoqi watershed was reconstructed for test of a modified RICEWQ-EXAMS model in aquatic eco-risk assessment and healthy risk assessment of the application of pesticides in rice paddy fields in Dongtiaoqi Watershed. RICEWQ-EXAMS model has been extensively adopted in assessment of exposure of paddy field-surface water in countries the world over. Now it is independently modified by the research group and tested in this project. Results show that among all the ten kinds of pesticides commonly used in paddy fields of this region, herbicide trifluralin showed a high risk of acute toxicity to green algae, insecticide endosulfan, both a high risk of acute toxicity and a risk of chronic toxicity to fish, avermectins a high risk of acute toxicity to daphnia, and hexaflumuron both a high risk of acute toxicity and a risk of chronic toxicity to daphnia, the other pesticides are quite low in risk of either acute or chronic toxicity to fish, daphnia and algae. As to the healthy risk assessment of the 10 pesticides, identical conclusions are reached whether using the traditional method or the risk assessment model that the 10 pesticides do not pose risk to human health when used properly in paddy fields. The results of the assessment tally quite well with the actual situation. Therefore, it could be concluded that the developed scenario and the modified model can quite effectively be used in risk assessment of the application of pesticides in paddy fields in Dongtiaoqi watershed.

Keywords: Dongtiaoqi River rice paddy pesticide risk assessment model scenario

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