



Application of a health risk assessment model for cattle exposed to pesticides in contaminated drinking waters: A study case from the Pampas region, Argentina

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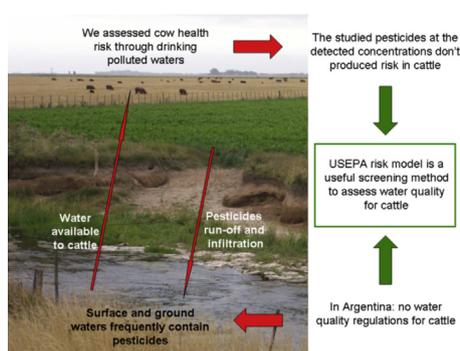
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HIGHLIGHTS

- Surface and ground waters in the Pampean plain frequently contain pesticides.
- We assessed the health risk for cows through drinking pesticides polluted waters.
- The studied pesticides at the detected concentrations don't produced risk in cows.
- USEPA risk model is a practical screening method to assess the cattle water quality.

GRAPHICAL ABSTRACT



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ABSTRACT

Using the USEPA methodology we estimated the probabilistic chronic risks for calves and adult cows due to pesticide exposure through oral intake of contaminated surface and ground waters in Tres Arroyos County (Argentina). Because published data on pesticide toxicity endpoints for cows are scarce, we used threshold levels based on interspecies extrapolation methods. The studied waters showed acceptable quality for cattle production since none of the pesticides were present at high-enough concentrations to potentially affect cow health. Moreover, ground waters had better quality than surface waters, with dieldrin and deltamethrin being the pesticides associated with the highest risk values in the former and the latter water compartments, respectively. Our study presents a novel use of the USEPA risk methodology proving it is useful for water quality evaluation in terms of pesticide toxicity for cattle production. This approach represents an alternative tool for water quality management in the absence of specific cattle pesticide regulatory limits.

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