

[Home](#) > [Journal](#) > [Earth & Environmental Sciences](#) > [JWARP](#)
[Indexing](#) | [View Papers](#) | [Aims & Scope](#) | [Editorial Board](#) | [Guideline](#) | [Article Processing Charges](#)
[JWARP](#) > Vol.4 No.10, October 2012



## Monitoring of Pesticides Residues in Italian Mineral Waters by Solid Phase Extraction and Gas Chromatography Mass Spectrometry

PDF (Size: 248KB) PP. 842-846 DOI : 10.4236/jwarp.2012.410097

### Author(s)

Anna Maria Tarola, Raffaella Preti

### ABSTRACT

Twenty-two pesticides and metabolites, selected on the basis of regional priority lists, were surveyed in thirty Italian mineral waters springs for three years by a procedure based on solid phase extraction in combination with gas chromatography coupled with mass spectrometry detection. The procedure proved to be simple, sensitive and reliable, the limits of detection and relative standard deviations were respectively in the range of 0.002 - 0.04 µg/L and 3% - 7%, recoveries ranged from 86% to 105% at the European Union Maximum Acceptable Concentration (MAC). Pesticide residues were detected in just one of the ninety water samples analyzed but no one exceeding the MAC. These results demonstrate the good quality of Italian mineral waters, not forgetting the need of constant revision and update of the priority list of pollutants.

### KEYWORDS

Mineral Water, Pesticides, SPE, GC-MS

### Cite this paper

A. Tarola and R. Preti, "Monitoring of Pesticides Residues in Italian Mineral Waters by Solid Phase Extraction and Gas Chromatography Mass Spectrometry," *Journal of Water Resource and Protection*, Vol. 4 No. 10, 2012, pp. 842-846. doi: 10.4236/jwarp.2012.410097.

### References

- [1] OJEC, " List of Natural Mineral Waters Recognized by Italy Text with EEA Relevance," Official Journal of European Communities, 216/1996, 2000, p. 148.
- [2] ISTAT Istituto Nazionale di Statistica, " La Distribuzione per uso Agricolo dei Prodotti Fitosanitari," Rapporto 2009.
- [3] C. D. Brown, J. M. Hollis, R. J. Bettison and A. Walker, " Leaching of Pesticides and a Bromide Tracer through Lysimeter from Five Contrasting Soils," *Pesticide Management Science*, Vol. 56, No. 1, 2000, pp. 83-93. doi:10.1002/(SICI)1526-4998(200001)56:1<83::AID-PS98>3.0.CO;2-8
- [4] E. Papadopoulou-Morkidou, D. G. Karpouzias, J. Patsias, A. Kotopoulou, A. Milothridou, K. Kintzikoglou and P. Vlachou, " The Potential of Pesticides to Contaminate Groundwater Resources of the Axios River Basin in Macedonia, Northern Greece. Part I. Monitoring Study in the North Part of the Basin," *Science of the Total Environment* Vol. 321, No. 1-3, 2004, pp. 127-146. doi: 10.1016/j.scitotenv.2003.08.019
- [5] E. Ballestros and M. J. Parrado, " Continuous Solid-Phase Extraction and Gas Chromatographic Determination of Organophosphorus Pesticides in Natural and Drinking Waters," *Journal of Chromatography A*, Vol. 1029, No. 1-2, 2004, pp. 267-273. doi:10.1016/j.chroma.2003.12.009
- [6] P. Auersperger, K. Lah, J. Kus and J. Marsel, " High Precision Procedure for Determination of Selected Herbicides and Their Degradation Products in Drinking Water by Solid-Phase Extraction and Gas Chromatography-Mass Spectrometry," *Journal of Chromatography A*, Vol. 1088, No. 1-2, 2005, pp. 234-241. doi:10.1016/j.chroma.2005.04.100

- [Open Special Issues](#)
- [Published Special Issues](#)
- [Special Issues Guideline](#)

[JWARP Subscription](#)
[Most popular papers in JWARP](#)
[About JWARP News](#)
[Frequently Asked Questions](#)
[Recommend to Peers](#)
[Recommend to Library](#)
[Contact Us](#)

Downloads:	402,253
Visits:	1,010,015

Sponsors, Associates, and Links >>

- [7] L. Ruiz-Gil, R. Romero-Gonzalez, A. Garrido Frenich and J. L. Martinez Vidal, " Determination of Pesticides in Water Samples by Solid Phase Extraction and Gas Chromatography Tandem Mass Spectrometry," Journal of Separation Science, Vol. 31, No. 1, 2008, pp. 151-161. doi: 10.1002/jssc.200700299
  
- [8] EPA, " Determination of Organic Compounds in Drinking Water by Liquid-Solid Extraction and Capillary Column Gas Chromatography/Mass Spectrometry," Method 525.2. EPA-500, Revision 11.1 August 1995.