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Agricultural Research Service, U.S. Department of Agriculture

Monitoring Water Quality for Agricultural Wastes and Agrichemicals (II)

JULY 1993 - SEPTEMBER 1995
104 citations from AGRICOLA
by
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Water Quality Information Center

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MONITORING WATER QUALITY FOR AGRICULTURAL WASTES AND AGRICHEMICALS (II)

1. Accuracy of nutrient runoff load calculations using time-composite sampling.
Shih, G.; Abtew, W.; Obeysekera, J.

Trans-ASAE v.37, p.419-429. (1994).

Includes references.

Descriptors: runoff-; phosphorus-; fertilizers-; drainage-; water-quality; watershed-management; sampling-; statistical-analysis

Abstract: The accuracy of time-composite sampling as a means to calculate phosphorus loads from agricultural runoff was evaluated analytically and numerically. It was shown that, when hydrographs

and concentration graphs were positively correlated, computations using a time-composite sampling strategy resulted in load underestimation. Combinations of 11 synthetically generated and 12 actual hydrographs and concentration graphs of agricultural runoff events were used for numerical analysis. The bias in load calculation with different sampling frequencies was determined. The influence of cross-correlation of hydrographs and concentration graphs on the direction and magnitude of bias was demonstrated. Although flow-composite sampling is theoretically correct for load computation, it is more expensive and, like other approaches, still involves uncertainties in both flow and concentration measurements. The dependence of the coefficient of variation (CV) of load on CV of flow rate, CV of concentration, and the cross-correlation between flow rate and concentration is presented analytically and graphically. To achieve load estimates comparable to the accuracy of flow-composite sampling, multiple time-composite sampling methods were investigated. This analysis indicates that with eight concentration values from eight time-composite samples of a runoff event, a reliable load estimation can usually be made.

NAL Call No.: 290.9-Am32T

2. Agrichemical detection in a shallow unconfined aquifer as influenced by sampling technique.

Clay, D. E.; Holman, P. W.; Clay, S. A.; Schumacher, T. E.; Scholes, K. A.; Bender, A. R.

Soil-Sci-Soc-Am-j. [Madison, Wis.] Soil Science Society of America. Jan/Feb 1994. v. 58 (1) p. 102-104.

Includes references.

Descriptors: groundwater-pollution; agricultural-chemicals; movement-in-soil; aquifers; contamination; detection; sampling; simulation-

Abstract: The sample collection system may influence the ability to describe the complex temporal and spatial variation of contaminants within an aquifer. The objective of this study was to evaluate the probability of detecting atrazine (2-chloro-4-ethylamino-6-isopropylamino-1,3,5-triazine) using a bailer or skimmer in an unconfined aquifer located below an atrazine-treated surface soil. In the simulated aquifer, the surface skimmer collected more Br(-) than the fixed sampling port located 15 cm below the aquifer surface and bailer. In the unconfined aquifer, the probability of an atrazine detection was higher when samples were collected with a surface skimmer than a bailer. These results suggest that the ability to determine vertical transport of contaminants from surface soil to shallow aquifers at the point of agrichemical application is dependent on surface sampling of the aquifer.

NAL Call No.: 56.9-So3

3. Agricultural chemical news: apparent shift in EPA's ground water policy.

Cohen, S.

Ground-water-monit-remediat. Dublin, OH : Ground Water Pub. Co., c1993-. Summer 1994. v. 14 (3) p. 97-98.

Descriptors: pesticides; groundwater; water-policy;

groundwater-pollution; monitoring-; environmental-legislation;
federal-government; state-government;
environmental-protection-agency; state-management-plans
NAL Call No.: GB1001.G76

4. An analysis of methods used to report water quality results
from a national sample: National Swine Survey.
Hurd, S.

Animal-health-insight p.1-4. (1993).

Includes references.

Descriptors: pigs-; animal-health; water-quality; wells-; age-;
nitrate-; detection-; methodology-; usa-

NAL Call No.: SF623.A64

5. Analysis of sulfonylurea herbicides by gas-liquid
chromatography. 2. Determination of chlorsulfuron and
metsulfuron-methyl in soil and water samples.

Klaffenbach, P.; Holland, P. T.

J-agric-food-chem v.41, p.396-401. (1993).

Includes references.

Descriptors: chlorsulfuron-; metsulfuron-; herbicide-residues;
soil-; water-; soil-pollution; water-pollution;
chemical-analysis; gas-liquid-chromatography; gas-chromatography;
methylation-; derivatives-; heat-stability;

n,n-dimethylchlorsulfuron-; n,n-dimethylmetsulfuron-methyl-
Abstract: Sulfonylureas are extracted from water samples using
solid-phase extraction (SPE) with C18-silica/ Teflon disks. Soil
samples are extracted with 0.1 M sodium hydrogen carbonate, and
the acidified extracts are processed as for water samples. The
concentrated eluents are treated with diazomethane in ethyl
acetate, which forms the thermally stable N,N'-dimethyl
derivatives of the herbicides. Residues are screened by capillary
GC using effluent splitting to electron capture and
nitrogen-phosphorus detectors. Residues are confirmed by GC-MS
using selected ion monitoring. Detection limits were below 0.1
microgram/L for water and below 1 microgram/kg for soil samples.
Accuracy and precision at 0.5 and 0.1 micrograms/L each were,
respectively, for chlorsulfuron 95+/- 2% and 110 +/- 16% and for
metsulfuron-methyl 90 +/- 6% and 98 +/- 11%. At 5 and 1
microgram/kg each in soil the recoveries were, respectively, for
chlorsulfuron 78 +/- 20% and 69 +/- 6% and for metsulfuron-methyl
92 +/- 18% and 105 +/- 17%. The methods are superior to previous
methods for these herbicides based on GC because the intact
herbicides are determined rather than thermal degradation
products.

NAL Call No.: 381-J8223

6. Application of a GIS-based nonpoint source nutrient loading
model for assessment of land development scenarios and water
quality in Owasco Lake, New York.

Heidtke, T. M.

Water-sci-technol v.28, p.595-604. (1993).

Paper presented at the IAWQ First International Conference on
"Diffuse (Nonpoint) Pollution: Sources, Prevention, Impact,

Abatement." September 19-24, 1993, Chicago, Illinois.
Descriptors: lakes-; water-quality; phosphorus-; loads-;
water-pollution; models-; geographical-information-systems;
land-use; new-york

NAL Call No.: TD420.A1P7

7. Assessing nonpoint-source pollution risk: a GIS application.

Lull, K. J.; Tindall, J. A.; Potts, D. F.

J-for v.93, p.35-40. (1995).

Includes references.

Descriptors: water-pollution; risk-;
geographical-information-systems; land-use; watersheds-;
montana-; risk-assessment

NAL Call No.: 99.8-F768

8. Assessing the impact of composting yard trimmings.

Cole, M. A.

Biocycle v.35, p.92-94, 96. (1994).

Includes references.

Descriptors: litter-plant; yards-; composts-; composting-;
heavy-metals; nutrients-; pesticides-; pollutants-; leaching-;
water-pollution; risk-; assessment-

NAL Call No.: 57.8-C734

9. Assessing your farm chemical storage and handling practices.

Weston, D.

NDSU-Ext-Serv. Fargo, N.D. : The University. Apr 1994. (AE-1077)
11 p.

Descriptors: fertilizers-; pesticides-; agricultural-chemicals;
farm-storage; handling-; assessment-; groundwater-; wells-;
pollutants-; leaching-; safety-; north-dakota;
leaching-potential-of-chemicals

NAL Call No.: S544.3.N9C46

10. Assessment of manure-application effects upon the runoff
water quality by algal assays and chemical analyses.

Couillard, D.; Li, J. F.

Environ-Pollut v.80, p.273-279. (1993).

Includes references.

Descriptors: runoff-water; manures-; application-methods;
application-rates; rain-; nitrogen-; phosphorus-;
bioavailability-; algae-; biological-production; growth-;
chemical-analysis; water-quality; surface-water; eutrophication-

NAL Call No.: QH545.A1E52

11. Assessment of nonpoint-source contamination of the High
Plains aquifer in south-central Kansas, 1987. Assessment of
nonpoint-source contamination, High Plains aquifer, Kansas.

Helgesen, J. O.; Stullken, L. E.; Rutledge, A. T.

Washington, DC : U.S. G.P.O. ; Denver, CO : For sale by U.S.
Geological Survey, Map Distribution, 1994. v, 51 p. : ill., maps.
"Assessment of nonpoint-source contamination, High Plains

aquifer, Kansas"--Title on p. (4) of cover.

Descriptors: Land-use-Environmental-aspects-Kansas;
Nonpoint-source-pollution-Kansas; Groundwater-Kansas-Quality;
Land-use-Environmental-aspects-High-Plains-Aquifer;
Nonpoint-source-pollution-High-Plains-Aquifer;
Groundwater-High-Plains-Aquifer-Quality

NAL Call No.: 407--G29W-no.2381-C

12. Assessment of nonpoint source pollution in stormwater runoff
in Louisville, (Jefferson County) Kentucky, USA.

Marsh, J. M.

Arch-environ-contam-toxicol. New York, Springer-Verlag. Nov 1993.
v. 25 (4) p. 446-455.

Includes references.

Descriptors: storms-; runoff-water; water-pollution; pesticides-;
bioassays-; biological-indicators; fish-; kentucky-

NAL Call No.: TD172.A7

13. Assessment of pollution of groundwater by atrazine.

Kuhnt, G.; Franzle, O.

Land-degrad-rehabil v.4, p.245-251. (1993).

Special Issue on the June 1992 Conference of the Society for
Environmental Toxicology and Chemistry (SETAC) / edited by G.P.
Hekstra, E. Ivanova and J.H. Weverling.

Descriptors: atrazine-; groundwater-pollution; risk-;
monitoring-; soil-types; simulation-; models-; germany-

NAL Call No.: S622.L26

14. Assessment of the fate of two herbicides in a Wyoming
rangeland soil: column studies.

Krzyszowska, A. J.; Allen, R. D.; Vance, G. F.

J-environ-qual v.23, p.1051-1058. (1994).

Includes references.

Descriptors: dicamba-; picloram-; leaching-; persistence-;
sorption-; soil-organic-matter; degradation-; rangeland-soils;
groundwater-pollution; simulation-models; LEACHP-model

Abstract: Extensive use of dicamba (2-methoxy-3,6-dichlorobenzoic acid) and picloram (4-amino-3,5,6-trichloropicolinic acid) in arid Wyoming, along with large volumes of irrigation water used in some areas, has created a concern for the potential contamination of surface and groundwaters by these herbicides. Persistence and mobility of dicamba and picloram were investigated in a Wyoming rangeland soil using batch adsorption and soil column studies. The objectives of this study were to characterize soil chemical and physical properties that affect herbicide transport, examine herbicide sorption, model herbicide movement, and estimate degradation rate constants. Essentially no sorption of dicamba was detected; however, picloram sorption was greatest in the highest organic C content horizon. Both saturated (5.90, 2.96, and 0.82 kg ha⁻¹ dicamba and 1.85, 0.97, and 0.47 kg ha⁻¹ picloram) and unsaturated (2.76 and 1.00 kg ha⁻¹ for dicamba and picloram, respectively) column experiments were conducted. The herbicides and Br tracer (34, 38, 69, and 137 micrograms L⁻¹) were displaced through the soil columns using distilled water

that was added in daily increments (60 mL d⁻¹). Degradation rate constants were calculated using both simple recovery fraction technique and by matching LEACHP-generated breakthrough curves to experimental data. For the two columns receiving intermediate application rates, anaerobic picloram dissipation was more rapid (t_{1/2} = 19 d) than for aerobic conditions (t_{1/2} = 87 d). The rate of dissipation of dicamba was approximately the same under aerobic and anaerobic conditions (t_{1/2} = 15 and 17 d in the saturated and unsaturated columns, respectively). Picloram and dicamba dissipation was more rapid at application rates, t_{1/2} of 23 and 17 d were measured for picloram and dicamba, respectively. Both herbicides were found to be highly mobile, with the mobility of picloram increasing at higher pore-water velocities.

NAL Call No.: QH540.J6

15. Assessment of the reproductive and developmental toxicity of pesticide/fertilizer mixtures based on confirmed pesticide contamination in California and Iowa groundwater.

Heindel, J. J.; Chapin, R. E.; Gulati, D. K.; George, J. D.; Price, C. J.; Marr, M. C.; Myers, C. B.; Barnes, L. H.; Fail, P. A.; Grizzle, T. B.

Fundam-appl-toxicol v.22, p.605-621. (1994).

Includes references.

Descriptors: pesticide-mixtures; ammonium-nitrate; groundwater-pollution; drinking-water; toxicity-; reproduction-; feed-intake; body-weight; reproductive-performance; mice-; fetal-development; fetal-resorption; litter-size; rats-; adverse-effects; california-; iowa-; water-consumption

Abstract: Pesticides and fertilizers, as used in modern agriculture, contribute to the overall low-level contamination of groundwater sources. In order to determine the potential of pesticide and fertilizer mixtures to produce reproductive or developmental toxicity at concentrations up to 100x the median level found in groundwater, we prepared and studied two mixtures of pesticides and a fertilizer (ammonium nitrate). One mixture containing aldicarb, atrazine, dibromochloropropane, 1,2-dichloropropane, ethylene dibromide, and simazine plus ammonium nitrate was considered to be a representative of groundwater contamination in California (CAL). The other, containing alachlor, atrazine, cyanazine, metolachlor, metribuzin, and ammonium nitrate, simulated groundwater contamination in Iowa (IOWA). Each mixture was administered in the drinking water of either Swiss CD-1 mice during a Reproductive Assessment by Continuous Breeding study or pregnant Sprague-Dawley rats (gd 6-20) at three dose levels (1x, 10x, and 100x) where 1x was the median concentration of each pesticide component as determined in the groundwater surveys in California or Iowa. Unlike conventional toxicology studies, the purpose of this study was to evaluate the health effects of realistic human concentrations. Thus, the testing concentrations are probably well below the maximally tolerated dose. Propylene glycol was used as the solubilizer for the pesticides in drinking water formulations in both studies. In the reproductive study, neither mixture caused any clinical signs of toxicity, changes in food or water consumption, or body weight in either F0 or F1 mice at doses up to 100x the median groundwater concentrations. There

were no. performance of either the F0 or the F1 generation mice exposed to either CAL or IOWA at up to 100x. Similarly, measures of spermatogenesis, epididymal sperm concentration, percentage motile sperm, percentage abnormal sperm, and testicular and epididymal histology were normal. In the developmental study, CAL- or IOWA-exposed female did not exhibit any significant treatment-related clinical signs of toxicity. No adverse effects of CAL or IOWA were observed for measures of embryo/fetal toxicity, including resorptions per litter, live litter size, or fetal body weight. CAL or IOWA did not cause an increased incidence of fetal malformations or variations. In summary, administration of these pesticide/fertilizer mixtures at levels up to 100-fold greater than the median concentrations in groundwater supplies in California or Iowa did not cause any detectable reproductive (mice), general, or developmental toxicity (rats).

NAL Call No.: RA1190.F8

16. An assessment system for potential groundwater contamination from Agricultural pesticide use in North Dakota.

Seelig, B.

NDSU-Ext-Serv. Fargo, N.D. : The University. Mar 1994. (63) 12 p.

Descriptors: groundwater-; agricultural-chemicals; water-pollution; aquifers-; filtration-; pesticides-; soil-types-textural; permeability-; farmland-; seed-dressings; north-dakota

NAL Call No.: S544.3.N9C46

17. Automated recognition of target compounds at low levels in environmental samples by means by capillary gas chromatography-mass spectrometry with dedicated mass spectral libraries and the macro program AUTARG. II. Application to pesticides in groundwater samples.

Stan, H. J.; Heberer, T.

J-chromatogr-A v.653, p.55-62. (1993).

Includes references.

Descriptors: pesticides-; pesticide-residues; gas-chromatography; mass-spectrometry; computer-software; data-banks; screening-; automation-; groundwater-pollution; computer-analysis

NAL Call No.: QD272.C4J68

18. Automated recognition of target compounds at low levels in environmental samples by mean by capillary gas chromatography-mass spectrometry with dedicated mass spectral libraries and the macro program AUTARG. I. Description of the macro program AUTARG.

Stan, H. J.; Schwarzer, F.

J-chromatogr-A v.653, p.45-53. (1993).

Includes references.

Descriptors: pesticides-; pesticide-residues; gas-chromatography; mass-spectrometry; computer-software; data-banks; screening-; automation-; soil-pollution; water-pollution; computer-analysis

NAL Call No.: QD272.C4J68

19. Background levels of nitrate-nitrogen and selected heavy metals for the Ames Plantation Watershed Project.
Ammons, J. T.; Gallagher, A. O.; Livingston, R. L.; Branson, J. L.; Lewis, R. J.

Tenn-farm-home-sci p.30-33. (1994).

Includes references.

Descriptors: soil-analysis; nitrate-nitrogen; heavy-metals; wells-; field-tests; tennessee-

NAL Call No.: 100-T25F

20. A chemodynamic approach for estimating losses of target organic chemicals from water during sample holding time.

Capel, P. D.; Larson, S. J.

Chemosphere v.30, p.1097-1107. (1995).

Includes references.

Descriptors: pesticide-residues; pollutants-; water-; samples-; chemical-reactions; sorption-; losses-; volatilization-; polluted-water

NAL Call No.: TD172.C54

21. Clean-up and confirmation procedures for gas chromatographic determination of pesticide residues in contaminated waters. I.

Viana, E.; Molto, J. C.; Manes, J.; Font, G.

J-chromatogr-A v.655, p.285-292. (1993).

Paper presented at the "21st Scientific Meeting of the Spanish Group of Chromatography and Related Techniques," October 21-23, 1992, Granada, Spain.

Descriptors: organochlorine-pesticides; organophosphorus-pesticides; pesticide-residues; gas-chromatography; sample-pretreatment; sulfuric-acid; potassium-hydroxide; inorganic-acids; water-pollution; chromic-acid

NAL Call No.: QD272.C4J68

22. A comparative study of policy measures for groundwater pollution control.

Oh, S. I.

J-rural-dev v.16, p.257-275. (1993).

Includes references.

Descriptors: nitrates-; groundwater-pollution; pollution-control; taxes-; externalities-; environmental-policy; farm-inputs; mathematical-models; comparisons-; water-use; social-costs; pigouvian-taxes; input-taxes

NAL Call No.: HD2095.5-.J8

23. Comparison of on-line solid-phase disk extraction to liquid-liquid extraction for monitoring selected pesticides in environmental waters.

Chiron, S.; Fernandez Alba, A.; Barcelo, D.

Environ-sci-technol v.27, p.2352-2359. (1993).

In the special issue: Southeast Asia: facing development challenges.

Descriptors: pesticides-; water-pollution; monitoring-;
analytical-methods

NAL Call No.: TD420.A1E5

24. The concept and need for a phosphorus assessment tool.
Lemunyon, J. L.; Gilbert, R. G.

J-prod-agric v.6, p.483-486. (1993).

Paper presented at the "Symposium on assessment of potential phosphorus losses from a field site", November 4, 1992, Minneapolis, Minnesota.

Descriptors: resource-management; phosphorus-; losses-from-soil; eutrophication-; water-pollution; risk-; assessment-; indexes-; phosphorus-index; nonpoint-source-pollution

NAL Call No.: S539.5.J68

25. Designing a nitrate monitoring program in a heterogeneous, carbonate aquifer.
Smith, R. T.; Ritzi, R. W. Jr.

Ground-Water. Dublin, Ohio : Ground Water Pub. Co. July/Aug 1993. v. 31 (4) p. 576-584.

Includes references.

Descriptors: aquifers-; carbonates-; hydraulic-conductivity; finite-element-analysis; simulation-models; nitrates-; movement-in-soil; zea-mays; glycine-max; rotations-; groundwater-pollution; ohio-; slug-tests

NAL Call No.: TD403.G7

26. Determination of acid herbicides in aqueous samples by liquid-solid disk extraction and capillary gas chromatography.
Hodgeson, J.; Collins, J.; Bashe, W.

J-chromatogr-A v.659, p.395-401. (1994).

Includes references.

Descriptors: herbicides-; herbicide-residues; extraction-; gas-chromatography; drinking-water; groundwater-; chlorinated-acid-herbicides

NAL Call No.: QD272.C4J68

27. Determination of dissolved-phase pesticides in surface water from the Yakima River basin, Washington, using the Goulden large-sample extractor and gas chromatography/mass spectrometry.
Foster, G. D.; Gates, P. M.; Foreman, W. T.; McKenzie, S. W.; Rinella, F. A.

Environ-sci-technol v.27, p.1911-1917. (1993).

Includes references.

Descriptors: surface-water; water-pollution; dissolving-; pesticides-; analytical-methods; washington-; water-dissolved-pesticides

NAL Call No.: TD420.A1E5

28. Determination of N-methylcarbamate pesticides in environmental water samples using automated on-line trace enrichment with exchangeable cartridges and high-performance liquid chromatography.

Hiemstra, M.; Kok, A. de.

J-chromatogr-A v.667, p.155-166. (1994).

Includes references.

Descriptors: carbamate-pesticides; metabolites-;
pesticide-residues; hplc-; extraction-; automation-;
water-pollution; drinking-water; surface-water

NAL Call No.: QD272.C4J68

29. Determination of pesticides in river water by gas
chromatography-mass spectrometry-selected-ion monitoring.

Kobayashi, H.; Ohyama, K.; Tomiyama, N.; Jimbo, Y.; Matano, O.;
Goto, S.

J-Chromatogr v.643, p.197-202. (1993).

Includes references.

Descriptors: herbicides-; herbicide-residues; water-pollution;
determination-; rivers-; gas-chromatography; mass-spectrometry

NAL Call No.: 475-J824

30. Determination of pesticides in water by capillary gas
chromatography with splitless injection of large sample volumes.

Suzuki, T.; Yaguchi, K.; Ohnishi, K.; Yamagishi, T.

J-chromatogr-A v.662, p.139-146. (1994).

Includes references.

Descriptors: insecticide-residues; fungicide-residues;
herbicide-residues; gas-chromatography; extraction-;
groundwater-; groundwater-pollution

NAL Call No.: QD272.C4J68

31. Development and implementation of the Virginia agronomic land
use evaluation system (values).

Donohue, S. J.; Simpson, T. W.; Baker, J. C.; Monnett, M. M.;
Hawkins, G. W.

Commun-soil-sci-plant-anal v.25, p.1103-1108. (1994).

Paper presented at the 1993 International Symposium on Soil
Testing and Plant Analysis: Precision Nutrient Management, August
14-19, 1993, Olympia, Washington. Part 1.

Descriptors: fertilizer-requirement-determination; soil-testing;
nutrients-; management-; databases-; land-use; land-evaluation;
water-quality; environmental-protection; water-pollution;
pollution-control; point-sources; virginia-; nutrient-management;
nonpoint-source-pollution; values-database

NAL Call No.: S590.C63

32. Economic and environmental effects of nitrogen testing for
fertilizer management.

Bosch, D. J.; Fuglie, K. O.; Keim, R. W.; United States. Dept.
of Agriculture. Economic Research Service. Resources and
Technology Division.

[Washington, D.C.] : Economic Research Service, Resources and
Technology Division, [1994] iv, 37 p. : ill., map.

Cover title.

Descriptors: Nitrogen-fertilizers-United-States;

Water-quality-United-States
NAL Call No.: aS651.B67--1994

33. Economics of agricultural management measures in the coastal zone. Economic Research Service report.
Heimlich, R. E.; Barnard, C. H. C. H. 1.; United States. Dept. of Agriculture. Economic Research Service.

Washington, D.C. : U.S. Dept. of Agriculture, Economic Research Service, 1995. ii, 45 p. : ill..
"February 1995"--P. [i].

Descriptors: Coastal-zone-management-United-States;
Agricultural-pollution-United-States;
Nonpoint-source-pollution-United-States

NAL Call No.: A281.9--Ag8A-no.698

34. Economics of screening for pesticides in ground water.
Natarajan, U.; Rajagopal, R.

Water-resour-bull v.30, p.579-588. (1994).

Includes references.

Descriptors: pesticides-; groundwater-; water-quality;
groundwater-pollution; screening-; monitoring-;
mathematical-models; cost-effectiveness-analysis; usa-;
sequential-analysis-screening; sample-compositing-screening

Abstract: In the United States, millions of dollars are currently spent to monitor water quality for a whole suite of organic compounds. However, results of several surveys conducted in the past decade indicate that only a few pesticides occur in a small proportion of wells. Screening methods based on historical evidence of contamination patterns and knowledge of the locales will have significant potential to reduce these costs and effectively identify contamination problems. In this paper, the economics of utilizing two screening methods, sequential analysis and sample compositing, in the design of monitoring strategies is captured in the form of mathematical models and illustrated for a state-level monitoring program. When the two methods are adopted, the total analytical cost to conclusively identify contaminated wells in a network of 4,000 wells is shown to range from \$12,500 to \$1,575,000 depending on the extent of contamination. In contrast, the total analytical cost of a conventional program where all the wells in the network are sampled and tested for a standard suite of pesticides at a cost of \$250/sample is one million dollars. Given such wide range in costs, it is prudent to incorporate the screening concepts presented in this paper in the development of cost-effective monitoring programs.

NAL Call No.: 292.9-Am34

35. Effective monitoring strategies for demonstrating water quality changes from nonpoint source controls on a watershed scale.

Spooner, J.; Line, D. E.

Water-sci-technol v.28, p.143-148. (1993).

Paper presented at the IAWQ First International Conference on "Diffuse (Nonpoint) Pollution: Sources, Prevention, Impact, Abatement." September 19-24, 1993, Chicago, Illinois.

Descriptors: water-quality; pollution-; sources-; watersheds-;
agricultural-production; agricultural-land; treatment-; usa-;
nonpoint-pollution-source

NAL Call No.: TD420.A1P7

36. Effects of management practices on surface water quality from
rice fields.

Feagley, S. E.; Sigua, G. C.; Bengston, R. L.; Bollich, P. K.;
Linscombe, S. D.

La-Agric-La-Agric-Exp-Stn v.36, p.8-10. (1993).

Descriptors: oryza-sativa; water-pollution; weed-control;
cultural-control; fertilizers-; field-tests; no-tillage-;
cultivation-; water-quality; louisiana-

NAL Call No.: 100-L939

37. An environmental yardstick for pesticides: an instrument to
measure the environmental impact of pesticides.

Reus, J.

Acta-hortic. Wageningen : International Society for Horticultural
Science. Oct 1993. v. 347 p. 215-224.

Paper presented at the, "Second International Symposium on
Integrated Fruit Production", August 24-28, 1992, Veldhoven,
Netherlands.

Descriptors: pesticides-; environmental-impact;
groundwater-pollution; toxicity-; soil-flora; soil-fauna;
aquatic-organisms; risk-; methodology-; netherlands-;
pollution-points; integrated-fruit-production

NAL Call No.: 80-Ac82

38. Enzyme immunoassay based survey of precipitation and surface
water for the presence of atrazine, metolachlor and 2,4-D.

Hall, J. C.; Van Deynze, T. D.; Struger, J.; Chan, C. H.

J-Environ-Sci-Health-Part-B-Pestic-Food-Contam-Agric-Wastes v.28,
p.577-598. (1993).

Includes references.

Descriptors: atrazine-; metolachlor-; 2,4-d-; precipitation-;
surface-water; enzyme-immunoassay; water-quality; monitoring-

NAL Call No.: TD172.J61

39. An enzyme immunoassay for the environmental monitoring of the
herbicide bromacil.

Bekheit, H. K. M.; Lucas, A. D.; Szurdoki, F.; Gee, S. J.;
Hammock, B. D.

J-agric-food-chem v.41, p.2220-2227. (1993).

Includes references.

Descriptors: bromacil-; elisa-; herbicide-residues;
polluted-soils; water-; water-pollution; soil-pollution;
indirect-elisa; direct-elisa

Abstract: Competitive enzyme-linked immunosorbent assays (ELISAs)
were devised for the environmental monitoring of the herbicide
bromacil. The polyclonal antibodies used in this work were raised
against two haptens. The bromacil molecule was derivatized at the
N-1- and 6-methyl-positions to obtain these haptens with

carboxyalkyl [(CH₂)_nCO₂H] spacer arms. The antibodies have been examined in several immunoassay formats. Two additional haptens were also synthesized and used for the preparation of coating antigens and enzyme tracers. Some of the heterologous indirect ELISAs in a coating antigen format showed promising sensitivities and, with only a few exceptions, slight cross-reactivities with a series of bromacil metabolites and related compounds. The best sensitivity (IC₅₀ = 0.25 ppb) and specificity were achieved with a system using antibodies derived from the hapten bearing the handle at the 6-methyl group (n = 1) and coating antigen synthesized from hapten with the bridging group at the N-1-position (n = 5). Further investigations were performed with this ELISA. Changing the pH value in the range 5-8.5 did not influence the sensitivity of the optimized assay. Human urine, however, exercised a strong effect on sensitivity, which varied from sample to sample. Organic solvents also affected assay sensitivity; nevertheless, IC₅₀s remained below 11 ppb with solvent concentrations up to 12.5%. Water samples spiked with bromacil were analyzed by ELISA. The results showed excellent correlation to spiked amounts at levels of 0.1-160 ppb. Soil samples fortified with bromacil were extracted with 1% aqueous NaOH, and then the obtained solutions were simply diluted with the assay buffer and analyzed by ELISA. Recoveries in the concentration range. formats did not perform better than the heterologous coating antigen assays. However, use of this format in homologous assays dramatically improved the sensitivity from poor inhibition to IC₅₀s of 3-10 ppb.

NAL Call No.: 381-J8223

40. EPA produces draft of ground water monitoring guidelines for pesticides.

Cohen, S.

Ground-water-monit-remediat. Dublin, OH : Ground Water Pub. Co., c1993-. Spring 1995. v. 15 (2) p. 86-87.

Descriptors: pesticides-; guidelines-; groundwater-; monitoring-; federal-government; usa-; environmental-protection-agency

NAL Call No.: GB1001.G76

41. Evaluating the extent of pesticide contamination in Virginia's groundwater.

Bruggeman, A. C.; Mostaghimi, S.; Holtzman, G. I.; Shanholtz, V. O.; Shukla, S.; Ross, B. B.

Pap-Am-Soc-Agric-Eng. St. Joseph, Mich. : American Society of Agricultural Engineers,. Summer 1994. (94-2186/94-3019) 25 p. Paper presented at the 1994 International Summer Meeting sponsored by The American Society of Agricultural Engineers, June 19-22, 1994, Kansas City, Missouri.

Descriptors: pesticides-; groundwater-pollution; nitrate-nitrogen; water-quality; temporal-variation; wells-; monitoring-; virginia-

NAL Call No.: 290.9-Am32P

42. Evaluation of runoff and erosion models.

Wu, T. H.; Hall, J. A.; Bonta, J. V.

J-irrig-drain-eng v.119, p.364-382. (1993).

Includes references.

Descriptors: erosion-; runoff-; sediment-yield; measurement-; simulation-models;

agricultural-non-point-source-pollution-model-agnpms;

areal-non-point-source-watershed-environmental-response-simulation-model-answers; chemicals-runoff-and-erosion-from-agricultural-management-systems-model-creams

NAL Call No.: 290.9-AM3Ps-IR

43. An expert systems approach for assessing the potential for pesticide contamination of ground water.

Crowe, A. S.; Mutch, J. P.

Ground-water. Dublin, Ohio : Ground Water Pub. Co. May/June 1994. v. 32 (3) p. 487-498.

Includes references.

Descriptors: pesticides-; groundwater-pollution; expert-systems; assessment-; models-

NAL Call No.: TD403.G7

44. Farming for drinking water : nitrate pollution of water : an assessment of a regulatory regime.

Elworthy, S. 1.

Aldershot ; Brookfield : Avebury, c1994. ix, 123 p..

Includes bibliographical references.

Descriptors: Nitrates-Environmental-aspects;

Nitrogen-fertilizers-Environmental-aspects-Great-Britain;

Water-Pollution-Law-and-legislation-Great-Britain;

Fertilizers-Law-and-legislation-Great-Britain

NAL Call No.: TD427.N5E44--1994

45. Field scale testing of a hyperfiltration unit for removal of creosote and pentachlorophenol from ground water: chemical and biological assessment.

Middaugh, D. P.; Thomas, R. L.; Lantz, S. E.; Heard, C. S.; Mueller, J. G.

Arch-environ-contam-toxicol. New York, Springer-Verlag. Apr 1994. v. 26 (3) p. 309-319.

Includes references.

Descriptors: groundwater-pollution; creosote-;

pentachlorophenol-; filtration-; filter-aids; toxicity-; tests-; menidia-; ceriodaphnia-

NAL Call No.: TD172.A7

46. Field-scale testing of a two-stage bioreactor for removal of creosote and pentachlorophenol from ground water: chemical and biological assessment.

Middaugh, D. P.; Lantz, S. E.; Heard, C. S.; Mueller, J. G.

Arch-environ-contam-toxicol. New York, Springer-Verlag. Apr 1994. v. 26 (3) p. 320-328.

Includes references.

Descriptors: groundwater-pollution; creosote-;

pentachlorophenol-; groundwater-; treatment-; bioreactors-;

microbial-activities; pseudomonas-; performance-appraisals;
toxicity-; tests-; menidia-; ceriodaphnia-

NAL Call No.: TD172.A7

47. Field-testing of nonpoint source monitoring efficiency.
Yoder, R. E.; Mote, C. R.; Yoder, D. C.; Ammons, J. T.; Tyler, D.
D.; Wilson, G. V.; Sanders, W. L.

Pap-Am-Soc-Agric-Eng. St. Joseph, Mich. : American Society of
Agricultural Engineers, . Summer 1994. (94-2091/94-2119) 17 p.
Paper presented at the "1994 International Summer Meeting
sponsored by the American Society of Agricultural Engineers,"
June 20-23, 1994, Kansas City, Missouri.

Descriptors: water-pollution; water-quality; flow-; wells-;
monitoring-

NAL Call No.: 290.9-Am32P

48. Final report, Thirty County Ground Water Monitoring Program
in Florida : submitted to the Florida Pesticide Review Council
December 3, 1993. Thirty County Ground Water Monitoring Program
in Florida, final report.

Shahane, A. N.; Dwinell, S. E.; Florida. Dept. of Agriculture
and Consumer Services.

Tallahassee, FL : Florida Dept. of Agriculture and Consumer
Services, [1993] 31 leaves : map,

Descriptors: Pesticides-Environmental-aspects-Florida;
Groundwater-Florida; Hydrogeology-Florida;
Water-Florida-Pesticide-content; Water-Pollution-Florida

NAL Call No.: QH545.P4S53--1993

49. Gas chromatographic/nitrogen-phosphorus detection method for
determination of ethylene thiourea in finished drinking waters:
collaborative study.

Longbottom, J. E.; Edgell, K. W.; Erb, E. J.; Lopez Avila, V.

J-AOAC-Int v.76, p.1113-1120. (1993).

Includes references.

Descriptors: water-pollution; drinking-water; monitoring-;
contaminants-; pesticide-residues; thiourea-; determination-;
analytical-methods

NAL Call No.: S583.A7

50. GLEAMS modeling of BMPs to reduce nitrate leaching in Middle
Suwannee River Area.

Reck, W. R.

Environmentally sound agriculture proceedings of the second
conference 20-22 April 1994 /. St. Joseph, Mich. : American
Society of Agricultural Engineers, c1994. 1994. 361-367.

Includes references.

Descriptors: groundwater-; water-quality; nitrate-nitrogen;
leaching-; farming-systems; farm-management; dairy-farming;
poultry-farming; monitoring-; models-; computer-techniques;
florida-;
groundwater-loading-effects-of-agricultural-management-systems;
best-management-practices

NAL Call No.: S589.7.E57-1994

51. Groundwater contamination from agricultural sources in Northern Italy: long-term monitoring and mathematical modelling. Fortina, L.; Capodaglio, A. G.; Baldi, M.

Water-sci-technol v.28, p.369-377. (1993).

Paper presented at the IAWQ First International Conference on "Diffuse (Nonpoint) Pollution: Sources, Prevention, Impact, Abatement." September 19-24, 1993, Chicago, Illinois.

Descriptors: groundwater-pollution; herbicides-;

mathematical-models; italy-

NAL Call No.: TD420.A1P7

52. Groundwater quality.

Mayer, A. S.; Imhoff, P. T.; Mitchell, R. J.; Rabideau, A. J.; McBride, J. F.; Miller, C. T.

Water-environ-res v.66, p.532-585. (1994).

Includes references.

Descriptors: groundwater-pollution; pollutants-;

transport-processes; water-quality; monitoring-; biodegradation-;

movement-in-soil; groundwater-flow; sorption-; desorption-;

pesticides-; leaching-; models-; literature-reviews

NAL Call No.: TD419.R47

53. Guidance specifying management measures for sources of nonpoint pollution in coastal waters : issued under the authority of Section 6217(g) of the Coastal Zone Act Reauthorization Amendments of 1990.

United States. Environmental Protection Agency.

Washington, DC : U.S. Environmental Protection Agency, Office of Water, 1993. 1 v. (various pagings) : ill..

"January 1993."

Descriptors:

United-States-Coastal-Zone-Act-Reauthorization-Amendments-of-1990;

Water-Pollution-United-States; Coastal-zone-management-United-

States; Marine-pollution-Law-and-legislation-United-States;

Nonpoint-source-pollution-Law-and-legislation-United-States

NAL Call No.: KF3787.25.U55--1993

54. A guide for understanding the atrazine ground and surface water risk reduction measures.

Grow-Veg-Small-Fruit-Newsl. Storrs, Conn. : Coop. Ext. Serv.,

USDA, College of Agriculture & Natural Resources, Univ. of Conn.

Apr 1993. v. 93 (4) p. 8-12.

Descriptors: atrazine-; water-pollution; application-rates;

pollution-control; regulations-; usa-

NAL Call No.: SB321.G85

55. Handling and storing pesticides.

Bonner, J.

Publ-Miss-State-Univ,-Coop-Ext-Serv. State College, Miss. :

Cooperative Extension Service, Mississippi State University. Oct

1993. (1910) 7 p.

In subseries: Farm a Syst.

Descriptors: pesticides-; storage-; application-; risk-; assessment-; water-quality

NAL Call No.: 275.29-M68Ext

56. The impact of livestock-farming on Welsh streams: the development and testing of a rapid biological method for use in the assessment and control of organic pollution from farms.

Rutt, G. P.; Pickering, T. D.; Reynolds, N. R. M.

Environ-Pollut v.81, p.217-228. (1993).

Includes references.

Descriptors: water-pollution; streams-; organic-wastes; intensive-livestock-farming; aquatic-invertebrates; biological-indicators; environmental-assessment; methodology-; wales-

NAL Call No.: QH545.A1E52

57. The impact of the citrus conversion process on ground and surface water

Shahane, A. N.

Environmentally sound agriculture proceedings of the second conference 20-22 April 1994 / p.461-470. (1994).

Includes references.

Descriptors: citrus-; crop-production; land-use; conversion-; environmental-impact; water-quality; surface-water; groundwater-; pesticides-; nutrient-content; monitoring-; case-studies; florida-

NAL Call No.: S589.7.E57-1994

58. Integrating water quality modeling with ecological risk assessment for nonpoint source pollution control: a conceptual framework.

Chen, Y. D.; McCutcheon, S. C.; Rasmussen, T. C.; Nutter, W. L.; Carsel, R. F.

Water-sci-technol v.28, p.431-440. (1993).

Paper presented at the IAWQ First International Conference on "Diffuse (Nonpoint) Pollution: Sources, Prevention, Impact, Abatement." September 19-24, 1993, Chicago, Illinois.

Descriptors: water-quality; protection-; pollution-control; ecology-; risk-; assessment-; models-; usa-; best-management-practices

NAL Call No.: TD420.A1P7

59. Laws and programs for controlling nonpoint source pollution in forest areas.

Brown, T. C.; Brown, D.; Binkley, D.

Water-resour-bull v.29, p.1-13. (1993).

Includes references.

Descriptors: water-pollution; water-quality; pollution-control; monitoring- legislation-; programs-; state-government; federal-government; usa-; best-management-practices

Abstract: Recent federal legislation strengthened nonpoint source pollution regulations and helped to support and standardize

pollution control efforts. A comprehensive review of current state and federal programs for forest areas reveals a substantial increase in agency water quality protection activities. These new efforts emphasize monitoring to assess the use and effectiveness of best management practices (BMPs). Recent monitoring reveals that BMP use is increasing and that such use typically maintains water quality within standards. However, information is generally lacking about the cost effectiveness of BMP programs. Carefully designed and executed monitoring is the key to better specification of BMPs and more cost effective water quality protection.

NAL Call No.: 292.9-Am34

60. Long-term sulfate dynamics at Lange Bramke (Harz) used for testing two acidification models.

Lange, H.; Hauhs, M.; Schmidt, S.

Water-air-soil-pollut v.79, p.339-351. (1995).

In the special issue: Biogeochemical monitoring in small catchments / edited by J. Cerny, M. Novak, T. Paces and R.K. Weider. Integrated Monitoring in Small Catchments," held September 18-20, 1993, Prague, Czech Republic.

Descriptors: sulfate-; nitrate-; hydrogen-ions; soil-solution; runoff-; acidification-; elements-; anions-; cations-; mountains-; watersheds-; forest-soils; coniferous-forests; picea-abies; lower-saxony; magic-model; bem-model

NAL Call No.: TD172.W36

61. Measurement of leakage from dairy waste holding ponds.

Demmy, G. G.; Bottcher, A. B.; Nordstedt, R. A.

Pap-Am-Soc-Agric-Eng. St. Joseph, Mich. : American Society of Agricultural Engineers,. Summer 1993. (934017) 15 p.

Paper presented at the "1993 International Summer Meeting sponsored by The American Society of Agricultural Engineers," and The Canadian Society of Agricultural Engineering," June 20-23, 1993, Spokane, Washington.

Descriptors: animal-wastes; seepage-; groundwater-; waste-disposal-sites

NAL Call No.: 290.9-Am32P

62. Modeling the effects of agricultural practices on nitrate concentration of shallow ground water in the Coastal Plain.

Xie, M.; Huffman, R. L.; Jennings, G. D.

Pap-Am-Soc-Agric-Eng. St. Joseph, Mich. : American Society of Agricultural Engineers,. Summer 1994. (94-2091/94-2119) 16 p.

Paper presented at the "1994 International Summer Meeting sponsored by the American Society of Agricultural Engineers," June 20-23, 1994, Kansas City, Missouri.

Descriptors: nitrate-nitrogen; wells-; monitoring-; water-quality; groundwater-pollution; simulation-models; prediction-

NAL Call No.: 290.9-Am32P

63. Monitoring for aldicarb residues in ground water of the Central Valley of California.

Marade, S. J.; Weaver, D. J.

Bull-environ-contam-toxicol v.52, p.19-24. (1994).

Includes references.

Descriptors: aldicarb-; insecticide-residues; monitoring-;
groundwater-; depth-; groundwater-pollution; california-
NAL Call No.: RA1270.P35A1

64. Monitoring for selected degradation products following a spill of VAPAM into the Sacramento River.

Rosario, A. d.; Remoy, J.; Soliman, V.; Dhaliwal, J.; Dhoot, J.; Perera, K.

J-environ-qual v.23, p.279-286. (1994).

Includes references.

Descriptors: soil-fumigants; accidents-; river-water;
water-quality; drinking-water; water-pollution;
spatial-distribution; metabolites-; analytical-methods;
public-health; california-; pesticide-spill; contaminant-plume
Abstract: Following a rail accident that spilled the soil

fumigant VAPAM into the Sacramento River on 14 July 1991, a special study was carried out to assess the extent of contamination in Lake Shasta. A total of 32 river water samples collected on 18 July and another 316 samples collected from 22 July through 30 August were analyzed. Data obtained clearly showed the presence of the degradation products of Metham, namely, methyl isothiocyanate, carbonyl sulfide, methyl sulfide, and traces of methylamine. However, due to the emergency nature of the incident that required quick analytical turnaround times, as well as the unavailability of a satisfactory analytical method, the presence of Metham could not be demonstrated with certainty initially. Nonetheless, the laboratory's timely response to the crisis assisted public health officials in assessing the extent of the contamination and assuring the community-at-large that their drinking water was safe to consume. None of the degradation products analyzed were detected 1 wk after the spill.

NAL Call No.: QH540.J6

65. Monitoring pesticide and nitrate in Virginia's groundwater--a pilot study.

Bruggeman, A. C.; Mostaghimi, S.; Holtzman, G. I.; Shanholz, V. O.; Shukla, S.; Ross, B. B.

Trans-ASAE v.38, p.797-807. (1995).

Includes references.

Descriptors: groundwater-; water-quality; wells-; pesticides-;
groundwater-pollution; monitoring-; aquifers-; nitrate-;
sampling-; virginia-

Abstract: Between October 1992 and February 1993, a total of 359 private wells in Northampton County were sampled and data on water-quality variables (temperature, pH, and conductivity), well construction, and site characteristics were collected. The groundwater samples were analyzed for aldicarb, alachlor, atrazine, carbofuran, linuron, methomyl, metolachlor, metribuzin, napropamide, pendimethalin, pronamide, simazine, and nitrate. The wells were stratified into shallow wells, withdrawing water from

the unconfined aquifer, and deep wells, withdrawing water from the deeper confined aquifers. The study was undertaken as a pilot study to demonstrate the applicability of a recently developed framework for evaluating the extent of pesticide contamination in Virginia's groundwater. Pesticides were detected in 14% of the shallow wells and in 7% of the deep wells sampled. Pesticide detection was associated with the well depth, with a higher probability of detecting a pesticide in the shallow unconfined aquifer than in the deeper aquifers. Nitrate above the U.S. EPA drinking water standard of 10 mg/L was found in 17% of the shallow and 1% of the deep wells. Pesticide and nitrate detections were not significantly related to well and site characteristics, such as crop type, location of well head, and distance to the nearest water body.

NAL Call No.: 290.9-Am32T

66. Monitoring water quality for agricultural wastes and agrichemicals: January 1991 - June 1993.

Emmert, B.

Quick-bibliogr-ser. Beltsville, Md., National Agricultural Library. Sept 1993. (93-67) 39 p.

Updates QB 92-68.

Descriptors: water-quality; agricultural-wastes; agricultural-chemicals; groundwater-pollution; bibliographies-

NAL Call No.: az5071.N3

67. The Moores Creek BMP effectiveness monitoring project.

Edwards, D. R.; Daniel, T. C.; Murdoch, J. F.; Vendrell, P. F.

Pap-Am-Soc-Agric-Eng. St. Joseph, Mich. : American Society of Agricultural Engineers, . Summer 1993. (932085) 26 p.

Paper presented at the "1993 International Summer Meeting sponsored by The American Society of Agricultural Engineers, and The Canadian Society of Agricultural Engineering," June 20-23, 1993, Spokane, Washington.

Descriptors: poultry-manure; runoff-water; water-quality; arkansas-

NAL Call No.: 290.9-Am32P

68. New directions in pesticide research, development, management, and policy : proceedings of the Fourth National Conference on Pesticides, November 1-3, 1993.

Weigmann, D. L.; National Conference on Pesticides (4th : 1993 : Blacksburg, Va.

Blacksburg, VA : Virginia Water Resources Research Center, Virginia Polytechnic Institute and State University, 1994. xi, 852 p. : ill..

Cosponsors: American Water Works Association ... [and others].

Descriptors:

Pesticides-Environmental-aspects-United-States-Congresses;

Water-Pollution-United-States-Congresses;

Soil-pollution-United-States-Congresses;

Pesticides-United-States-Safety-measures-Congresses

NAL Call No.: TD427.P35N36--1993

69. Nonpoint source control in the Long Creek EPA National Monitoring Project.
Jennings, G. D.; Line, D. E.; Coffey, S. W.; Spooner, J.; Harman, W. A. I.; Burris, M. A.

Pap-Am-Soc-Agric-Eng. St. Joseph, Mich. : American Society of Agricultural Engineers, . Summer 1994. (94-2186/94-3019) 12 p.
Paper presented at the 1994 International Summer Meeting sponsored by The American Society of Agricultural Engineers, June 19-22, 1994, Kansas City, Missouri.

Descriptors: water-quality; monitoring-; pollution-control; dairy-farms; animal-wastes; management-; runoff-; arable-land; nutrients-; crop-management; water-supply; watersheds-

NAL Call No.: 290.9-Am32P

70. Nonpoint sources.

Line, D. E.; Osmond, D. L.; Coffey, S. W.; Arnold, J. A.; Gale, J. A.; Spooner, J.; Jennings, G. D.

Water-environ-res v.66, p.585-601. (1994).

Includes references.

Descriptors: water-pollution; soil-pollution; water-quality; water-resources; pollutants-; pesticides-; biodegradation-; pollution-control; models-; monitoring-; literature-reviews

NAL Call No.: TD419.R47

71. Nutrient management measure to be implemented in the coastal zone.

Weinberg, A. C.

J-soil-water-conserv v.49, p.71-72. (1994).

In the special issue: Nutrient management. Paper presented at a conference held on April 20-22, 1993, St. Louis, Missouri.

Descriptors: water-quality; environmental-protection; coastal-areas; water-pollution; pollution-control; programs-; state-government; legislation-; nonpoint-source-pollution

NAL Call No.: 56.8-J822

72. On-farm nitrogen tests improve fertilizer efficiency, protect groundwater.

Hartz, T. K.; Smith, R. F.; Schullbach, K. F.; LeStrange, M.

Calif-agric v.48, p.29-32. (1994).

Descriptors: nitrogen-fertilizers; efficiency-; groundwater-pollution; field-tests; sap-; soil-testing; california-

NAL Call No.: 100-C12Cag

73. On-line and off-line sample preparation of acidic herbicides and bentazone transformation products in estuarine waters.

Chiron, S.; Martinez, E.; Barcelo, D.

J-chromatogr-A v.665, p.283-293. (1994).

Paper presented at the "6th Symposium on Handling of Environmental and Biological Samples in Chromatography," July 19-21, 1993, Guildford, U.K.

Descriptors: bentazone-; phenoxy-herbicides; residues-;

extraction-; liquid-chromatography; mass-spectrometry;
water-pollution; estuaries-; surface-water

NAL Call No.: QD272.C4J68

74. Optimization of an analytical procedure for the determination of triazine herbicides in environmental samples.

Prosen, H.; Zupancic Kralj, L.; Marsel, J.

J-chromatogr-A v.704, p.121-130. (1995).

Paper presented at the "International Symposium on Chromatographic and Electrophoretic Techniques," October 10-13, 1994, Bled, Slovenia.

Descriptors: triazine-herbicides; herbicide-residues; extraction-; chromatography-; hplc-; polluted-water; drinking-water; river-water; maize-soils

NAL Call No.: QD272.C4J68

75. Pesticide contamination of groundwater in Virginia: BMP impact assessment.

Mostaghimi, S.; McClellan, P. W.; Cooke, R. A.

Water-sci-technol v.28, p.379-387. (1993).

Paper presented at the IAWQ First International Conference on "Diffuse (Nonpoint) Pollution: Sources, Prevention, Impact, Abatement." September 19-24, 1993, Chicago, Illinois.

Descriptors: groundwater-pollution; pesticides-; water-quality; improvement-; watersheds-; monitoring-; systems-; agronomy-; techniques-; wells-; virginia-; best-management-practices

NAL Call No.: TD420.A1P7

76. Pesticide contamination of mixing/loading sites: proposals for streamlined assessment and cleanup, and pollution prevention.

Thomas, M. V.

Environmentally sound agriculture proceedings of the second conference 20-22 April 1994 / p.203-207. (1994).

Includes references.

Descriptors: soil-pollution; groundwater-pollution; pesticides-; contamination-; assessment-; methodology-; cleaning-; pollution-control; florida-

NAL Call No.: S589.7.E57-1994

77. Regional assessment of NLEAP NO3-N leaching indices.

Wylie, B. K.; Shaffer, M. J.; Hall, M. D.

Water-resour-bull v.31, p.399-408. (1995).

Includes references.

Descriptors: nitrates-; nitrate-nitrogen; leaching-; indexes-; aquifers-; groundwater-; agricultural-land; groundwater-pollution; irrigated-sites; fertilizers-; geographical-information-systems; colorado-;

nitrate-leaching-and-economic-analysis-package-indexes;

nonpoint-source-groundwater-pollution; south-platte-river

Abstract: Nonpoint source ground water contamination by nitrate

nitrogen (NO3-N) leached from agricultural lands can be

substantial and increase health risks to humans and animals.

Accurate and rapid methods are needed to identify and map

localities that have a high potential for contamination of shallow aquifers with NO₃-N leached from agriculture. Evaluation Of Nitrate Leaching and Economic Analysis Package (NLEAP) indices and input variables across an irrigated agricultural area on an alluvial aquifer in Colorado indicated that all leaching indices tested were more strongly correlated with aquifer NO₃-N concentration than with aquifer N mass. Of the indices and variables tested, the NO₃-N Leached (NL) index was the NLEAP index most strongly associated with groundwater NO₃-N concentration (r² values from 0.37 to 0.39). NO₃-N concentration of the leachate was less well correlated with ground water NO₃-N concentration (r² values from 0.21 to 0.22). Stepwise regression analysis indicated that, although inorganic and organic/inorganic fertilizer scenarios had similar r² values, the Feedlot Indicator (proximity) variable was significant over and above the NO₃-N Leached index for the inorganic scenario. The analysis also showed that combination of either Movement Risk Index (MRI) or NO₃-N concentration of the leachate with the NO₃-N Leached index leads to an improved regression, which provides insight into area-wide associations between agricultural activities and ground water NO₃-N concentration.

NAL Call No.: 292.9-Am34

78. Regional scale ground-water vulnerability estimates: impact of reducing data uncertainties for assessments in Hawaii.

Loague, K.

Ground-water. Dublin, Ohio : Ground Water Pub. Co. July/Aug 1994. v. 32 (4) p. 605-616.

Includes references.

Descriptors: groundwater-pollution; pesticides-; leaching-; assessment-; hawaii-

NAL Call No.: TD403.G7

79. Regulations generate business for resourceful dealers.

Luporter, C.

Solutions v.37, p.28-31. (1993).

Descriptors: pesticides-; testing-; businesses-; regulations-; federal-government; environmental-impact; water-quality; usa-

NAL Call No.: 57.8-S04

80. Risk assessment and communication related to water resources: January 1985-Dec 1993.

Makuch, J.; Emmert, B.

Quick-bibliogr-ser. Beltsville, Md., National Agricultural Library. Apr 1994. (94-27) 40 p.

Descriptors: water-resources; environmental-impact; environmental-impact-reporting; wastes-; public-health; risk-; bibliographies-

NAL Call No.: aZ5071.N3

81. The role of ecotoxicity testing in assessing water quality.

Chapman, J. C.

Aust-j-ecol v.20, p.20-27. (1995).

In the special issue; Use of biota to assess water quality /
edited by R.H. Norris, B.T. Hart, M. Finlayson and K.R. Norris.
Descriptors: water-pollution; water-quality; pollutants-;
bioassays-; indicator-species; biological-indicators; toxicity-;
pesticide-residues; algae-; aquatic-organisms;
pollution-indicators

NAL Call No.: QH540.A8

82. Sampling of non-point source contamination in high-capacity wells.

Zlotnik, V. A.; Spalding, R. F.; Exner, M. E.; Burbach, M. E.

Water-sci-technol v.28, p.409-413. (1993).

Paper presented at the IAWQ First International Conference on
"Diffuse (Nonpoint) Pollution: Sources, Prevention, Impact,
Abatement." September 19-24, 1993, Chicago, Illinois.

Descriptors: irrigation-; wells-; groundwater-pollution;
nitrates-; atrazine-; concentration-; sampling-; nebraska-

NAL Call No.: TD420.A1P7

83. Sampling your irrigation water.

Neufeld, J.; Balliette, J.; Adams, V. D.; Wheeler, G.

Fact-sheet-Max-C-Fleischmann-Coll-Agric,-Coop-Ext-Serv. [Reno,
Nev.] : The College, . 1994. (94-28) 2 p.

Includes references.

Descriptors: irrigation-water; water-quality; salinity-; sodium-;
boron-; chloride-; ions-; ph-; bicarbonates-; nitrogen-;
hazards-; samples-

NAL Call No.: S544.3.N3C66

84. Saving the catchments of Albany's harbours.

Prout, A.

J-agric. South Perth, W.A. : Dept. of Agriculture, 1972-. 1993.
v. 34 (4) p. 137-140.

Descriptors: estuaries-; water-quality; pollution-; agriculture-;
phosphorus-fertilizers; runoff-; pollution-control; soil-testing;
erosion-control; soil-amendments; land-use; pastures-; australia-

NAL Call No.: 23-W52J

85. Simultaneous field measurement of nitrate-nitrogen and matric pressure head.

Moutonnet, P.; Pagenel, J. F.; Fardeau, J. C.

Soil-Sci-Soc-Am-j. [Madison, Wis.] Soil Science Society of
America. Nov/Dec 1993. v. 57 (6) 1458-1462.

Includes references.

Descriptors: soil-analysis; matric-potential; nitrate-nitrogen;
nitrogen-content; soil-solution; measurement-; tensiometers-;
modification-; groundwater-pollution; monitoring-; tensionic-

Abstract: Groundwater protection from NO3 pollution requires
frequent measurements of potential water fluxes and NO(3)-N
concentrations. This study was conducted to improve researchers'
abilities in managing these two parameters by using a new
device. We developed a method allowing the researcherto
simultaneously measure the hydraulic head and the NO(3)-N

concentration in the soil watersolution. Measurements were made using the tensionic, in which a permeable porous ceramic cup allows the diffusion of NO₃ from the soil to the water inside the cup. Diffusion is completed within 8 d. A system of capillary tubes allows this water to be extracted for measurement of NO₃-N, and it may be reinjected subsequently. An aliquot can be used for isotopic analysis. Tests carried out on a maize crop (*Zea mays* L.) in 1991 led to two

NAL Call No.: 56.9-So3

86. Solid-phase extraction followed by high-performance liquid chromatographic analysis for monitoring herbicides in drinking water.

Balinova, A.

J-Chromatogr v.643, p.203-207. (1993).

Includes references.

Descriptors: herbicide-residues; drinking-water; water-pollution; analysis-; hplc-

NAL Call No.: 475-J824

87. Summary of aldicarb monitoring and research programs in the U.S.A.

Jones, R. L.; Estes, T. L.

J-contam-hydrol v.18, p.107-140. (1995).

Includes references.

Descriptors: aldicarb-; pesticide-residues; degradation-; soil-; leaching-; monitoring-; drinking-water; water-pollution; unsaturated-zone; saturated-zone

NAL Call No.: TD426.J68

88. Theory, modeling, and experience in the management of nonpoint-source pollution.

Russell, C. S.; Shogren, J. F.

Boston : Kluwer Academic Publishers, c1993. xvii, 345 p. : ill., maps.

Papers presented at a workshop sponsored by the Association of Environmental and Resource Economists and held at the University of Kentucky, Lexington, KY, in June 1991.

Descriptors:

Water-Pollution-Government-policy-United-States-Congresses;
Agricultural-pollution-Government-policy-United-States-Congresses;
Water-Pollution-Measurement-Congresses; Water-quality-management-Costs-Congresses

NAL Call No.: HC110.W43T48-1993

89. Tillage effects on agrichemical movement through the Vadose Zone.

Wilson, G. V.; Tyler, D. D.; Storck, N. J.; Essington, M. E.; Mueller, T. G.

Tenn-farm-home-sci p.34-39. (1994).

Includes references.

Descriptors: soil-analysis; water-quality; macropores-; conservation-tillage; groundwater-; infiltration-; leachates-;

field-tests; tennessee-

NAL Call No.: 100-T25F

90. Tracking seepage with terrain conductivity survey and wells.

Huffman, R. L.; Westerman, P. W.

Pap-Am-Soc-Agric-Eng. St. Joseph, Mich. : American Society of Agricultural Engineers, . Summer 1993. (934016) 13 p.

Paper presented at the "1993 International Summer Meeting sponsored by The American Society of Agricultural Engineers," and The Canadian Society of Agricultural Engineering," June 20-23, 1993, Spokane, Washington.

Descriptors: animal-wastes; lagoons-; seepage-; groundwater-; water-quality; monitoring-

NAL Call No.: 290.9-Am32P

91. Unlocking Iowa's farming future: assuring profit--preserving water resources.

PM-Iowa-State-Univ-Coop-Ext-Serv. Ames, Iowa : Iowa State University, Cooperative Extension Service. Feb 1993. (1501) 24 p.

Descriptors: farm-management; conservation-tillage; erosion-control; nitrogen-fertilizers; groundwater-pollution; soil-testing; phosphorus-; pesticides-; manures-; iowa-

NAL Call No.: 275.29-IO9PA

92. Use and abuse of sample surveys in agroecology.

Sparks, T. H.; Firbank, L. G.

Asp-appl-biol p.161-170. (1994).

In the series analytic: Sampling to make decisions / edited by P. Brain, S.H. Hockland, P.D. Lancashire, and L.C. Sim.

Descriptors: sampling-; land-improvement; drainage-; soil-management; flood-control; plantations-; agricultural-land; weed-control; watersheds-; runoff-; runoff-water; nitrate-

NAL Call No.: QH301.A76

93. Use of Gammarus pulex bioassay to measure the effects of transient carbofuran runoff from farmland.

Matthiessen, P.; Sheahan, D.; Harrison, R.; Kirby, M.; Rycroft, R.; Turnbull, A.; Volkner, C.; Williams, R.

Ecotoxicol-envIRON-saf v.30, p.111-119. (1995).

Includes references.

Descriptors: carbofuran-; granules-; broadcasting-; drainage-water; watersheds-; stream-flow; storms-; gammarus-pulex; feeding-; inhibition-; toxicity-; mortality-; nontarget-effects; nontarget-organisms

NAL Call No.: QH545.A1E29

94. Use of GIS to rank counties for potential groundwater pollution.

Smith, P. A.; Scott, H. D.

Ark-farm-res v.42, p.4-5. (1993).

Includes references.

Descriptors: information-systems; groundwater-; groundwater-pollution; monitoring-; probabilistic-models;

pesticides-; prediction-; arkansas-;
geographic-information-systems

NAL Call No.: 100-Ar42F

95. Use of ground water monitoring data for pesticide regulation.
Barrett, M. R.; Williams, W. M.; Wells, D.

Weed-technol v.7, p.238-247. (1993).

Includes references.

Descriptors: water-quality; groundwater-pollution; pesticides-;
leaching-; pesticide-residues; drinking-water; regulations-;
health-hazards; contaminants-; quality-standards; monitoring-;
usa-; maximum-contaminant; levels-

NAL Call No.: SB610.W39

96. Using the phosphorus assessment tool in the field.
Stevens, R. G.; Sobeki, T. M.; Spofford, T. L.

J-prod-agric v.6, p.487-492. (1993).

Paper presented at the "Symposium on assessment of potential
phosphorus losses from a field site", November 4, 1992,
Minneapolis, Minnesota.

Descriptors: site-class-assessment; phosphorus-;
losses-from-soil; risk-; indexes-; site-factors;
resource-management; water-pollution; oregon-; washington-;
phosphorus-index; nonpoint-source-pollution

NAL Call No.: S539.5.J68

97. Water Monitoring: aerial spray applications.
Bush, B. F.

Proc-For-Veg-Manage-Conf p.32-37. (1993).

Descriptors: herbicide-residues; monitoring-; water-quality;
water-pollution; aerial-spraying; weed-control;
vegetation-management; forests-; california-

NAL Call No.: QH541.5.F6F67

98. Water-quality assessment of the Delmarva Peninsula, Delaware,
Maryland, and Virginia : effects of agricultural activities on,
and distribution of, nitrate and other inorganic constituents in
the surficial aquifer. Water quality assessment of the Delmarva
Peninsula, Delaware, Maryland, and Virginia. inorganic
constituents in the surficial aquifer.
Hamilton, P. A.; Geological Survey (U.S.).

Towson, Md. : U.S. Geological Survey ; Denver, CO : Books and
Open-file Reports Section [distributor], 1993. iv, 87 p. : ill.,
maps 1 computer disk (3 1/2 in.).

Errata slip inserted. drive and DOS.

Descriptors: Water-quality-Delmarva-Peninsula;

Groundwater-Delmarva-Peninsula;

Agriculture-Environmental-aspects-Delmarva-Peninsula

NAL Call No.: TD225.D45W37--1993

99. Water-quality assessment of the Kentucky River Basin,
Kentucky : nutrients, sediments, and pesticides in streams,
1987-90. Water quality assessment of the Kentucky River Basin,

Kentucky.

Haag, K. H.; Porter, S. D.; Geological Survey (U.S.).

Louisville, Ky. : U.S. Dept. of the Interior, U.S. Geological Survey ; Denver, CO : Earth Science Information Center, Open-File Reports Section [distributor], 1995. ix, 135 p. : ill., maps.

"National Water-Quality Assessment Program"--Cover.

GB701.W375--no.94-4227

100. Water-quality assessment of the Rio Grande Valley study unit, Colorado, New Mexico, and Texas : analysis of selected nutrient, suspended-sediment, and pesticide data. Water quality assessment of the Rio Grande Valley study unit, Colorado, New Mexico, and Texas.

Anderholm, S. K.; Radell, M. Jo.; Richey, S. F.; Geological Survey (U.S.).

Albuquerque, N.M. : U.S. Dept. of the Interior, U.S. Geological Survey ; Denver, Colo. : Earth Science Information Center, Open-File Reports Section [distributor], 1995. xiv, 203 p. : ill., maps.

Three maps on 3 folded leaves in pocket.

Descriptors: Groundwater-Pollution-Rio-Grande-Valley;

Suspended-sediments-Rio-Grande-Valley;

Pesticides-Environmental-aspects-Rio-Grande-Valley

NAL Call No.: GB701.W375--no.94-4061

101. Water-quality assessment of the South Platte River Basin, Colorado, Nebraska, and Wyoming : analysis of available nutrient, suspended-sediment, and pesticide data, water years 1980-92.

Water quality assessmet of the South Platte River Basin, Colorado, Nebraska, and Wyoming.

Dennehy, K. F.; Geological Survey (U.S.).

Denver, Colo. : U.S. Dept. of the Interior, U.S. Geological Survey ; Earth Science Information Center, Open-File Reports Section [distributor], 1995. vii, 145 p. : ill., maps.

Shipping list no.: 95-0128-P.

Descriptors: Water-quality-South-Platte-River-Watershed-Colo;

-and-Neb; Suspended-sediments-Environmental-aspects-South-

Platte-River-Watershed-Colo; -and-Neb; Pesticides-Environmental-

aspects-South-Platte-River-Watershed-Colo; -and-Neb

NAL Call No.: GB701.W375--no.94-4095

102. Water quality monitoring on a 2500-acre agricultural watershed at Ames Plantation.

Yoder, R. E.; Mote, C. R.

Tenn-farm-home-sci p.15-18. (1994).

Includes references.

Descriptors: water-quality; water-pollution; groundwater-;

surface-water; runoff-water; erosion-; conservation-tillage;

sampling-; contaminants-; tennessee-; nonpoint-source-pollution;

point-source-pollution

NAL Call No.: 100-T25F

103. Well sampling for agrichemicals in high capacity systems.

Zlotnik, V. A.; Burbach, M. E.; Exner, M. E.; Spalding, R. F.

J-soil-water-conserv v.50, p.95-101. (1995).

Includes references.

Descriptors: groundwater-pollution; point-sources; nitrate-; atrazine-; contamination-; irrigated-sites; wells-; sampling-; aquifers-; nebraska-; non-point-source-pollution; irrigation-wells

NAL Call No.: 56.8-J822

104. Well-water quality data from a volunteer sampling program: Audubon County, Iowa.

Seigley, L. S.; Hallberg, G. R.; Walther, P. R.; Miller, G. A.

J-Iowa-Acad-Sci-J-I-A-S v.100, p.15-20. (1993).

Includes references.

Descriptors: water-quality; wells-; coliform-count; contaminants-; nitrate-nitrogen; sampling-; volunteers-; water-pollution; iowa-

NAL Call No.: Q11.J68

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