Monitoring Water Quality for Agricultural Wastes and Agrichemicals (II)

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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.
   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.

Includes references.
Descriptors: groundwater-pollution; agricultural-chemicals; movement-in-soil; aquifers--; contamination--; detection--; sampling--
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.

Descriptors: pesticides--; groundwater--; water-policy;
Hurd, S.

Includes references.
Descriptors: pigs-; animal-health; water-quality; wells-; age-; nitrate-; detection-; methodology-; usa-
NAL Call No.: SF623.A64

Klaffenbach, P.; Holland, P. T.
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

Heidtke, T. M.
Paper presented at the IAWQ First International Conference on "Diffuse (Nonpoint) Pollution: Sources, Prevention, Impact,
Descriptors: lakes-; water-quality; phosphorus-; loads-; water-pollution; models-; geographical-information-systems; land-use; new-york
NAL Call No.: TD420.A1P7

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

Helgesen, J. O.; Stullken, L. E.; Rutledge, A. T.
"Assessment of nonpoint-source contamination, High Plains
12. Assessment of nonpoint source pollution in stormwater runoff in Louisville, (Jefferson County) Kentucky, USA.
Marsh, J. M.

Includes references.
Descriptors: storms--; runoff-water; water-pollution; pesticides--; bioassays--; biological-indicators; fish--; kentucky--
NAL Call No.: TD172.A7

Kuhnt, G.; Franzle, O.

Descriptors: atrazine--; groundwater-pollution; risk--; monitoring--; soil-types; simulation--; models--; germany--
NAL Call No.: S622.L26

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

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 (t₁/₂ = 19 d) than for aerobic conditions (t₁/₂ = 87 d). The rate of dissipation of dicamba was approximately the same under aerobic and anaerobic conditions (t₁/₂ = 15 and 17 d in the saturated and unsaturated columns, respectively). Picloram and dicamba dissipation was more rapid at application rates, t₁/₂ 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

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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.

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.
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.
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.
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
*****************************************************************
24. The concept and need for a phosphorus assessment tool.
Lemunyon, J. L.; Gilbert, R. G.
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.
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.
Includes references.
Descriptors: herbicides-; herbicide-residues; extraction-; gas-chromatography; drinking-water; groundwater-; chlorinated-acid-herbicides
NAL Call No.: QD272.C4J68

Foster, G. D.; Gates, P. M.; Foreman, W. T.; McKenzie, S. W.; Rinella, F. A.
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.

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.

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.

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.

Cover title.
Descriptors: Nitrogen-fertilizers-United-States;

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

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

35. Effective monitoring strategies for demonstrating water quality changes from nonpoint source controls on a watershed scale.
Spooner, J.; Line, D. E.
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.
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.
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.
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.
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 haptenes. The bromacil molecule was derivatized at the N-1- and 6-methyl-positions to obtain these haptenes 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.
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.; Shanholz, V. O.; Shukla, S.; Ross, B. B.
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.
43. An expert systems approach for assessing the potential for pesticide contamination of ground water.
Crowe, A. S.; Mutch, J. P.
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. l.
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.
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.
Includes references.
Descriptors: groundwater-pollution; creosote-; pentachlorophenol-; groundwater-; treatment-; bioreactors-;
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.
Descriptors: water-pollution; water-quality; flow-; wells-; monitoring-
NAL Call No.: 290.9-Am32P

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

Longbottom, J. E.; Edgell, K. W.; Erb, E. J.; Lopez Avila, V.
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.
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
51. Groundwater contamination from agricultural sources in Northern Italy: long-term monitoring and mathematical modelling.

Fortina, L.; Capodaglio, A. G.; Baldi, M.


Descriptors: groundwater-pollution; herbicides-; mathematical-models; italy-
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.

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.
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

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

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

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

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.

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

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

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
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66. Monitoring water quality for agricultural wastes and
Emmert, B.

Quick-bibliogr-ser. Beltsville, Md., National Agricultural
Updates QB 92-68.
Descriptors: water-quality; agricultural-wastes;
agricultural-chemicals; groundwater-pollution; bibliographies-
NAL Call No.: aZ5071.N3
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67. The Moores Creek BMP effectiveness monitoring project.
Edwards, D. R.; Daniel, T. C.; Murdoch, J. F.; Vendrell, P. F.

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,
Descriptors: poultry-manure; runoff-water; water-quality;
arkansas-
NAL Call No.: 290.9-Am32P
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68. New directions in pesticide research, development,
management, and policy : proceedings of the Fourth National
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
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Jennings, G. D.; Line, D. E.; Coffey, S. W.; Spooner, J.; Harman, W. A. I.; Burris, M. A.
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
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70. Nonpoint sources.
Line, D. E.; Osmond, D. L.; Coffey, S. W.; Arnold, J. A.; Gale, J. A.; Spooner, J.; Jennings, G. D.
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
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71. Nutrient management measure to be implemented in the coastal zone.
Weinberg, A. C.
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
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72. On-farm nitrogen tests improve fertilizer efficiency, protect groundwater.
Hartz, T. K.; Smith, R. F.; Schullbach, K. F.; LeStrange, M.
Descriptors: nitrogen-fertilizers; efficiency-; groundwater-pollution; field-tests; sap-; soil-testing;
california-
NAL Call No.: 100-C12Cag
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73. On-line and off-line sample preparation of acidic herbicides and bentazone transformation products in estuarine waters.
Chiron, S.; Martinez, E.; Barcelo, D.
Descriptors: bentazone-; phenoxy-herbicides; residues-;
74. Optimization of an analytical procedure for the determination of triazine herbicides in environmental samples.
Prosen, H.; Zupancic Kralj, L.; Marsel, J.
Descriptors: triazine-herbicides; herbicide-residues; extraction--; chromatography--; hplc--; polluted-water; drinking-water; river-water; maize-soils
NAL Call No.: QD272.C4J68

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

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

Includes references.
Descriptors: groundwater-pollution; pesticides-; leaching-; assessment-; hawaii-
NAL Call No.: TD403.G7

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79. Regulations generate business for resourceful dealers. Luporter, C.

Descriptors: pesticides-; testing-; businesses-; regulations-; federal-government; environmental-impact; water-quality; usa-
NAL Call No.: 57.8-SO4

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Descriptors: water-resources; environmental-impact; environmental-impact-reporting; wastes-; public-health; risk-; bibliographies-
NAL Call No.: aZ5071.N3

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81. The role of ecotoxicity testing in assessing water quality. Chapman, J. C.

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
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82. Sampling of non-point source contamination in high-capacity wells.
Zlotnik, V. A.; Spalding, R. F.; Exner, M. E.; Burbach, M. E.

Descriptors: irrigation-; wells-; groundwater-pollution; nitrates-; atrazine-; concentration-; sampling-; nebraska-
NAL Call No.: TD420.A1P7
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83. Sampling your irrigation water.
Neufeld, J.; Balliette, J.; Adams, V. D.; Wheeler, G.

Includes references.
Descriptors: irrigation-water; water-quality; salinity-; sodium-; boron-; chloride-; ions-; ph-; bicarbonates-; nitrogen-; hazards-; samples-
NAL Call No.: S544.3.N3C66
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84. Saving the catchments of Albany's harbours.
Prout, A.

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
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85. Simultaneous field measurement of nitrate-nitrogen and matric pressure head.
Moutonnet, P.; Pagenel, J. F.; Fardeau, J. C.

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 NO3-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 researcher to simultaneously measure the hydraulic head and the NO3-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 NO(3)-N, and it may be reinjected subsequently. An aliquot can be used for isotopic analysis. Testscarrried 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.

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.

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.

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.

Includes references.
Descriptors: soil-analysis; water-quality; macropores--; conservation-tillage; groundwater--; infiltration--; leachates--;
90. Tracking seepage with terrain conductivity survey and wells.
Huffman, R. L.; Westerman, P. W.
Descriptors: animal-wastes; lagoons-; seepage-; groundwater-; water-quality; monitoring-
NAL Call No.: 100-T25F

91. Unlocking Iowa's farming future: assuring profit--preserving water resources.
Descriptors: farm-management; conservation-tillage; erosion-control; nitrogen-fertilizers; groundwater-pollution; soil-testing; phosphorus-; pesticides-; manures-; iowa-
NAL Call No.: 290.9-Am32P

92. Use and abuse of sample surveys in agroecology.
Sparks, T. H.; Firbank, L. G.
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.
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.
Includes references.
Descriptors: information-systems; groundwater-; groundwater-pollution; monitoring-; probabilistic-models;
95. Use of ground water monitoring data for pesticide regulation.
Barrett, M. R.; Williams, W. M.; Wells, D.
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
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96. Using the phosphorus assessment tool in the field.
Stevens, R. G.; Sobecki, T. M.; Spofford, T. L.
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
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97. Water Monitoring: aerial spray applications.
Bush, B. F.
Descriptors: herbicide-residues; monitoring--; water-quality;
water-pollution; aerial-spraying; weed-control;
vegetation-management; forests--; california--
NAL Call No.: QH541.5.F66
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98. Water-quality assessment of the Delmarva Peninsula, Delaware,
Maryland, and Virginia : effects of agricultural activities on,
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.
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
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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.

GB701.W375--no.94-4227


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

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

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.

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.

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
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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.

Includes references.
Descriptors: water-quality; wells-; coliform-count; contaminants-; nitrate-nitrogen; sampling-; volunteers-; water-pollution; iowa-
NAL Call No.: Q11.J68