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Monitoring Water Quality for Agricultural Wastes and Agrichemicals (I)

January 1991 - June 1993
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Updates QB 92-68

101 citations from AGRICOLA
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Water Quality Information Center

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MONITORING WATER FOR AGRICULTURAL WASTES AND AGRICHEMICALS

1 NAL Call. No.: S583.A7

Analysis of polychlorinated biphenyls in aqueous samples using C18 glass column extraction.
Molto, J.C.; Pico, Y.; Manes, J.; Font, G.
Arlington, VA : AOAC International; 1992 Jul.
Journal of AOAC International v. 75 (4): p. 714-719; 1992 Jul.
Includes references.

Language: English

Descriptors: Water pollution; Water quality; Polychlorinated biphenyls; Contaminants; Pesticide residues; Extraction; Gas chromatography

2 NAL Call. No.: TD420.A1E5
Analyte stability studies conducted during the National Pesticide Survey. Munch, D.J.; Frebis, C.P.
Washington, D.C. : American Chemical Society; 1992 May.
Environmental science & technology v. 26 (5): p. 921-925; 1992 May. Includes references.

Language: English

Descriptors: U.S.A.; Pesticides; Pollutants; Stability; Environmental protection; Government organizations; Surveys; Samples; Groundwater pollution; Analytical methods

3 NAL Call. No.: HC79.E5E5
Application of land-use data and screening tests for evaluating pesticide runoff toxicity in surface waters.
Wilcock, R.J.
New York, N.Y. : Springer-Verlag; 1993 May.
Environmental management v. 17 (3): p. 365-371; 1993 May.
Includes references.

Language: English

Descriptors: New Zealand; Surface water; Pesticide residues; Runoff; Toxicity; Land use; Data analysis; Screening

4 NAL Call. No.: QD1.A45
Aseptic sampling of unconsolidated heaving soils in saturated zones. Leach, L.E.; Ross, R.R.
Washington, D.C. : The Society; 1991.
ACS Symposium series - American Chemical Society (465): p. 334-348; 1991. In the series analytic: Groundwater residue sampling design / edited by R.G. Nash and A.R. Leslie.
Includes references.

Language: English

Descriptors: Groundwater; Water pollution; Agricultural chemicals; Soil; Sampling

Abstract: Collecting undisturbed subsurface soil samples in

noncohesive, heaving sandy environments below the water table has been extremely difficult using conventional soil sampling equipment. Several modifications of the conventional hollow-stem auger coring procedures were adapted, which allowed collection of depth-discreet soil samples in very fluid, heaving sands. These methods were used where accurate subsurface characterization of the contamination of RCRA and CERCLA sites was essential. Cohesionless cores were consistently retrieved, aseptically extruded from the core barrel inside an anaerobic environmental chamber, and preserved in the field. The physical, chemical, and biological integrity of discreet soil intervals was maintained for laboratory analysis. Statistical analysis of repeated collection of soil samples from the same depth intervals in nearby boreholes was documented.

5 NAL Call. No.: 100 W52 (1) no.709T
Assessment of pesticide residues in soil water and wells associated with an apple orchard and strawberry fields.
Weaver, Joseph E.
Morgantown : Agricultural and Forestry Experiment Station, West Virginia University,; 1993.
23 p. : ill. ; 23 cm. (Bulletin (West Virginia University. Agricultural and Forestry Experiment Station) ; 709T.).
January 1993. Includes bibliographical references (p. 14-15).

Language: English

6 NAL Call. No.: RA1270.P35A1
Atrazine, alachlor, and carbofuran contamination of well water in central Maine.
Bushway, R.J.; Hurst, H.L.; Perkins, L.B.; Tian, L.; Cabanillas, C.G.; Young, B.E.S.; Ferguson, B.S.; Jennings, H.S.
New York, N.Y. : Springer-Verlag; 1992 Jul.
Bulletin of environmental contamination and toxicology v. 49 (1): p. 1-9; 1992 Jul. Includes references.

Language: English

Descriptors: Maine; Drinking water; Atrazine; Alachlor; Carbofuran; Groundwater pollution; Monitoring; Enzyme immunoassay; Rapid methods; Costs

7 NAL Call. No.: SB951.P47
Automated quasi-continuous immunoanalysis of pesticides with a flow injection system.
Kramer, P.M.; Schmid, R.D.
Essex : Elsevier Applied Science Publishers; 1991.
Pesticide science v. 32 (4): p. 451-462; 1991. Includes references.

Language: English

Descriptors: Atrazine; Propazine; Simazine; Water pollution; Water quality; Chemical composition; Detection; Elisa; Immunoassay; Comparisons; Measurement

Abstract: Chemical methods (HPLC, GC/MS) for the control of pesticides in water at low concentrations are time consuming, expensive and need sample pre-concentration. Immunoassays offer the potential of rapid, inexpensive, sensitive and specific detection methods. This paper presents a flow injection system that is based on an immunochemical reaction and which provides the opportunity for automated, quasi-continuous measurements for screening water samples for the presence of pesticides. The method of flow injection immunoanalysis (FIIA) was compared with competitive ELISA (enzyme-linked immunosorbent assay). It is possible to measure in the range of interest of the 0.1 micrograms litre-1, which is the limiting value of the European drinking water directive. Measurements were made for the triazine herbicides atrazine and propazine, which both cross-react with the polyclonal antiserum used. Furthermore, this device includes a new development of a membrane reactor for the exchange of used biological material, in this case antibodies. A brief comparison of ELISA and FIIA is presented, giving an overview of some aspects of the assays.

8 NAL Call. No.: S583.A7
C18 Extraction of atrazine from small water sample volumes.
Shepherd, T.R.; Carr, J.D.; Duncan, D.; Pederson, D.T.
Arlington, VA : AOAC International; 1992 May.
Journal of AOAC International v. 75 (3): p. 581-583; 1992 May.
Includes references.

Language: English

Descriptors: Atrazine; Detection; Herbicide residues; Water quality; Extraction; Gas chromatography; Mass spectrometry; Evaluation; Sampling; Volume

9 NAL Call. No.: S590.C63
Changes in extractable phosphorus between fall and spring in some Alberta soils.
Malhi, S.S.; Nyborg, M.; Kryzanowski, L.; Gill, K.S.; Arshad, M.A. New York, N.Y. : Marcel Dekker; 1991.
Communications in soil science and plant analysis v. 22 (13/14): p. 1439-1446; 1991. Includes references.

Language: English

Descriptors: Alberta; Luvisols; Chernozemic soils; Soil testing; Soil test values; Phosphorus; Extraction; Measurement; Seasonal variation; Sampling; Autumn; Spring; Regression analysis; Fertilizer requirement determination

10 NAL Call. No.: TD172.A7

Comparison of enzyme-linked immunosorbent assay and high-performance liquid chromatography for the analysis of atrazine in water from Czechoslovakia. Bushway, R.J.; Perkins, L.B.; Fukal, L.; Harrison, R.O.; Ferguson, B.S. New York, N.Y. : Springer-Verlag; 1991 Sep.
Archives of environmental contamination and toxicology v. 21 (3): p. 365-370; 1991 Sep. Includes references.

Language: English

Descriptors: Czechoslovakia; Water pollution; Atrazine; Samples; Analytical methods; Hplc; Accuracy

11 NAL Call. No.: SF221.D342
Comparison of test methods for the determination of nitrates in well water. Rounds, M.; Nielsen, S.; Turco, R.; Liska, B. Ames, Iowa : International Association of Milk, Food and Environmental Sanitarians, Inc; 1992 Apr.
Dairy, food and environmental sanitation v. 12 (4): p. 214-215; 1992 Apr. Includes references.

Language: English

Descriptors: Drinking water; Nitrates; Analytical methods

12 NAL Call. No.: QD1.A45
Compendium of in situ pore-liquid samplers for vadose zone. Dorrance, D.W.; Wilson, L.G.; Everett, L.G.; Cullen, S.J. Washington, D.C. : The Society; 1991.
ACS Symposium series - American Chemical Society (465): p. 300-331; 1991. In the series analytic: Groundwater residue sampling design / edited by R.G. Nash and A.R. Leslie. Includes references.

Language: English

Descriptors: Groundwater; Water pollution; Agricultural chemicals; Sampling; Lysimeters

Abstract: In recent years, there has been increasing emphasis on monitoring contaminant transport in the vadose zone. Vadose zone monitoring relies on a variety of in situ samplers to collect pore-liquids under saturated and/or unsaturated conditions. This compendium describes these samplers together with their advantages and disadvantages.

13 NAL Call. No.: aSB249.C6
Cotton production and water quality an initial assessment. Crutchfield, Stephen R.
United States, Dept. of Agriculture, Economic Research Service, Resources and Technology Division
Washington, DC : U.S. Dept. of Agriculture, Economic Research Service, Resources and Technology Division ; Rockville, MD : ERS-NASS [distributor,; 1991; A 93.44:AGES 91-05.

v, 47 p. : map ; 28 cm. (ERS staff report ; no. AGES 9105.). Cover title. "January 1991"--P. iii. Includes bibliographical references (p. 23-24).

Language: English; English

Descriptors: Cotton; Water quality; Agricultural chemicals

14 NAL Call. No.: S592.6.N5C87 1992
Current viewpoints on the use of soil nitrate tests in the South proceedings of a symposium conducted by the Southern Branch, American Society of Agronomy, February 4, 1992, Lexington Center Heritage Hall, Lexington, KY. Wells, K. L._1935-; Thompson, W. R.
American Society of Agronomy, Southern Branch
Madison, Wis., USA : The Society,; 1992.
ix, 51 p. : ill. ; 28 cm. Includes bibliographical references.

Language: English; English

Descriptors: Soils

15 NAL Call. No.: QD1.A45
Design of field research and monitoring programs to assess environmental fate. Jones, R.L.; Norris, F.A.
Washington, D.C. : The Society; 1991.
ACS Symposium series - American Chemical Society (465): p. 165-181; 1991. In the series analytic: Groundwater residue sampling design / edited by R.G. Nash and A.R. Leslie. Includes references.

Language: English

Descriptors: Groundwater; Agricultural chemicals; Residues; Sampling

Abstract: Field research and monitoring study design should depend on study objectives, environmental conditions, chemical properties, and use patterns. Comprehensive groundwater research studies will usually involve sampling both the unsaturated and saturated zone after a carefully controlled application but often monitoring objectives may be satisfied by collecting only water samples. In comprehensive research studies, timely analysis of samples is essential so that results from previous sampling intervals can be used to guide activities at future sampling dates. Sampling procedures should be tailored to agricultural chemical properties and site characteristics. Regardless of the study design or objectives, sample contamination should always be avoided by using trained and conscientious personnel with cleanliness always being a primary concern.

16 NAL Call. No.: 475 J824

Determination of chlorotriazines in aqueous environmental samples at the ng/l level using preconcentration with a cation exchanger and on-line high-performance liquid chromatography.
Coquart, V.; Hennion, M.C.
Amsterdam : Elsevier Science Publishers; 1991 Oct25.
Journal of chromatography v. 585 (1): p. 67-73; 1991 Oct25.
Includes references.

Language: English

Descriptors: Herbicide residues; Water pollution; Drinking water; Determination; Hplc

17 NAL Call. No.: 475 J824
Determination of triazines and organophosphorus pesticides in water samples using solid-phase extraction.
Molto, J.C.; Pico, Y.; Font, G.; Manes, J.
Amsterdam : Elsevier Science Publishers; 1991 Aug30.
Journal of chromatography v. 555 (1/2): p. 137-145; 1991 Aug30. Includes references.

Language: English

Descriptors: Triazine herbicides; Organophosphorus pesticides; Water pollution; Determination; Gas chromatography

18 NAL Call. No.: SB951.P47
Development and validation of a modified fugacity model of pesticide leaching from farmland.
Brooke, D.; Matthiessen, P.
Essex : Elsevier Applied Science Publishers; 1991.
Pesticide science v. 31 (3): p. 349-361; 1991. Includes references.

Language: English

Descriptors: England; Mecoprop; Simazine; Concentration; Leaching; Measurement; Models; Monitoring; Soil properties; Water pollution; Agricultural soils

Abstract: To test whether a simple model could provide reasonable quantitative estimates of chemical concentrations in a dynamic situation, Mackay's fugacity model was adapted to represent an agricultural field. The intention was to determine the extent of modification required to obtain reasonable agreement with experimental results, or indeed if such agreement could be achieved. The validity of the model was tested at Rosemaund Experimental Husbandry Farm in Herefordshire, where the chemical input and output could be monitored and meteorological and other parameters measured regularly. Results from monitoring concentrations of two pesticides at this site in recent years. and changes that have been made to the model in attempting to fit the observed behaviour are described.

19 NAL Call. No.: 475 J824
Direct determination of metamitron in surface water by large sample volume injection.
Geerdink, R.B.
Amsterdam : Elsevier Science Publishers; 1991 Apr26.
Journal of chromatography v. 543 (1): p. 244-249; 1991 Apr26.
Includes references.

Language: English

Descriptors: Metamitron; Water pollution; Determination; Hplc

20 NAL Call. No.: QD1.A45
Economical monitoring procedure for assessing agrochemical nonpoint source loading in unconsolidated aquifers.
Spalding, R.F.; Exner, M.E.; Burbach, M.E.
Washington, D.C. : The Society; 1991.
ACS Symposium series - American Chemical Society (465): p. 255-261; 1991. In the series analytic: Groundwater residue sampling design / edited by R.G. Nash and A.R. Leslie.
Includes references.

Language: English

Descriptors: Groundwater; Agricultural chemicals; Piezometers; Sampling; Water pollution

Abstract: Multilevel samplers (MLSs) consisting of piezometers and tube samplers, a logical approach for determining the direction of groundwater flow and chemistry in shallow (< 6 m) nonpoint source (NPS) groundwater investigations. These MLSs have evolved from fastening the tubing to conduit at specific depths while the conduit was lowered into the hollow stem auger train to the present method of installing preassembled MLSs in boreholes drilled by the reverse circulation rotary method without the use of drilling additives. This method allows the aquifer to be sectioned into discrete layers and provides an instantaneous snapshot of both flow and chemistry in three dimensions. The procedure has been used successfully at several sites in Nebraska. The method is cheap, fast, and accurate in areas where the depth to water is less than 6 m. While the same procedure can be used where depths to water exceed 6 m, the need for gas-driven samplers substantially increases the cost.

21 NAL Call. No.: QH545.A1E58
Ecosystem-level testing of a synthetic pyrethroid insecticide in aquatic mesocosms.
Webber, E.C.; Deutsch, W.G.; Bayne, D.R.; Seesock, W.C.
Elmsford, N.Y. : Pergamon Press; 1992.
Environmental toxicology and chemistry v. 11 (1): p. 87-105; 1992. Paper presented at the "Symposium on Aquatic Mesocosms in Ecotoxicology," Tenth Annual Meeting of the Society of Environmental Toxicology, October 28-November 2, 1989,

Toronto, Ontario, Canada. Includes references.

Language: English

Descriptors: Pyrethroid insecticides; Insecticide residues; Ponds; Water pollution; Toxicity; Community ecology; Aquatic insects; Aquatic invertebrates; Crustacea; Phytoplankton; Aquatic environment; Lepomis macrochirus; Zooplankton

22 NAL Call. No.: TD223.N36 1992
The effects of temporal and spatial variability on monitoring agricultural nonpoint source pollution.
Johengen, T.H.; Beeton, A.M.
Washington, DC : U.S. Environmental Protection Agency; 1992.
Proceedings: the National RCWP Symposium : 10 years of controlling agricultural nonpoint source pollution : the RCWP experience : Sept 13-17, 1992, Orlando, Florida. p. 89-95; 1992. Includes references.

Language: English

Descriptors: Michigan; Water pollution; Pesticide residues; Pollution control; Spatial variation; Temporal variation; Monitoring; Water quality

23 NAL Call. No.: QH545.A1E29
Effects of the herbicides hexazinone and triclopyr ester on aquatic insects. Kreutzweiser, D.P.; Holmes, S.B.; Behmer, D.J.
Orlando, Fla. : Academic Press; 1992 Jun.
Ecotoxicology and environmental safety v. 23 (3): p. 364-374; 1992 Jun. Includes references.

Language: English

Descriptors: Ontario; Aquatic insects; Hexazinone; Triclopyr; Toxicology; Adverse effects; Nontarget organisms; Nontarget effects; Lethal dose; Dosage effects; Streams; Laboratory tests

24 NAL Call. No.: TD420.A1E5
Enantioselective determination of chlordane components using chiral high-resolution gas chromatography-mass spectrometry with application to environmental samples.
Buser, H.R.; Muller, M.D.; Rappe, C.
Washington, D.C. : American Chemical Society; 1992 Aug.
Environmental science & technology v. 26 (8): p. 1533-1540; 1992 Aug. Includes references.

Language: English

Descriptors: Sweden; Antarctica; Baltic sea; Chlordane; Water pollution; Sea water; Animal tissues; Chemical analysis; Herrings; Atlantic salmon; Seals; Pygoscelis; Analytical

methods; Toxicity

25 NAL Call. No.: RA1221.T69
The evaluation of bacterial biosensors for screening of water pollutants. Hoof, F.M. van; Jonghe, E.G. de; Briers, M.G.; Hansen, P.D.; Pluta, H.J.; Rawson, D.M.; Wilmer, A.J.
New York, N.Y. : John Wiley & Sons; 1992 Feb.
Environmental toxicology and water quality v. 7 (1): p. 19-33; 1992 Feb. Includes references.

Language: English

Descriptors: Linuron; Atrazine; Water pollution; Pollutants; Synechococcus; Biosensors; Catalysts; Monitoring; On line; Electron transfer; Photosynthesis

Abstract: Bacterial biosensors incorporating the cyanobacterium Synechoccus as the biocatalyst have been evaluated by three laboratories as potential biomonitors for detecting water pollutants. The biosensors were capable of detecting at low concentrations herbicides that interact with photosynthetic electron transfer chains. Statistical evaluation of the interlaboratory comparison results for linuron and atrazine indicated that these compounds can be detected rapidly at 50 micrograms/L concentrations.

26 NAL Call. No.: QH545.A1E58
Evaluation of community and ecosystem monitoring parameters at a high-elevation, Rocky Mountain study site.
Bruns, D.A.; Wiersma, G.B.; Minshall, G.W.
Elmsford, N.Y. : Pergamon Press; 1992.
Environmental toxicology and chemistry v. 11 (4): p. 459-472; 1992. Paper presented at the Symposium on Community Metrics to Detect Ecosystem Effects, 10th Annual Meeting of the Society of Environmental Toxicology, October 28-November 2, 1989, Toronto, Ontario, Canada. Includes references.

Language: English

Descriptors: Wyoming; Aquatic insects; Aquatic communities; Aquatic environment; Soil flora; Water pollution; Air pollution; Sulfate; Deposition; Acid deposition; Community ecology; Species diversity; Forest litter; Decomposition; Lignin; Nitrogen content; Foliage; Mountain areas; Monitoring; Environmental degradation

27 NAL Call. No.: 292.8 J82
Evaluation of the accuracy and precision of annual phosphorus load estimates from two agricultural basins in Finland.
Rekolainen, S.; Posch, M.; Kamari, J.; Ekholm, P.
Amsterdam : Elsevier Scientific Publishers, B.V.; 1991 Nov.
Journal of hydrology v. 128 (1/4): p. 237-255; 1991 Nov. Includes references.

Language: English

Descriptors: Finland; Agricultural land; Drainage; Runoff; Pollution; Phosphorus; Transport processes; Flow; Estimates; Sampling; Frequency; Monitoring; Mathematical models; Comparisons

Abstract: The accuracy and precision of phosphorus load estimates from two agricultural drainage basins in western Finland were evaluated, based on continuous flow measurements and frequent flow-proportional sampling of total phosphorus concentration during a 2 year period. The objective was to compare different load calculation methods and to evaluate alternative sampling strategies. An hourly data set of concentrations was constructed by linear interpolation, and these data were used in Monte Carlo runs for producing replicate data sets for calculating the accuracy and precision of load estimates. All estimates were compared with reference values computed from the complete hourly data sets. The load calculation methods based on summing the products of regularly sampled flows and concentrations produced the best precision, whereas the best accuracy was achieved using methods based on multiplying annual flow by flow-weighted annual mean concentration. When comparing different sampling strategies, concentrating sampling in high runoff periods (spring and autumn) was found to give better accuracy and precision than strategies based on regular interval sampling throughout the year. However, the best result was obtained by taking samples flow-proportionally within the highest peak flows plus additional regular interval (e.g. biweekly) samples outside these flow peaks. Using this strategy, which calls for automatic sampling equipment, accuracies better than 5% and precisions better than 10% can be achieved with only 30-50 samples per year.

28 NAL Call. No.: QD1.A45
Experiences and knowledge gained from vadose zone sampling.
Starr, J.L.; Meisinger, J.J.; Parkin, T.B.
Washington, D.C. : The Society; 1991.
ACS Symposium series - American Chemical Society (465): p. 279-289; 1991. In the series analytic: Groundwater residue sampling design / edited by R.G. Nash and A.R. Leslie.
Includes references.

Language: English

Descriptors: Groundwater; Water pollution; Agricultural chemicals; Sampling

Abstract: Vadose zone sampling offers an opportunity for assessing the impact on groundwater quality of chemicals applied at the land surface. Many interacting factors control the fate of chemicals in the field cause major sampling problems even for experienced researchers. Underlying any sampling program is the absolute need to clearly define the study's objectives. The sampling procedure should then be

developed with a clear conceptual view of the physical, chemical, and biological processes that affect the fate of the chemical(s) under investigation. Basic questions regarding the spatial, temporal, and statistical distributions of specific parameters must also be addressed in developing an efficient sampling plan. There is no "best sampling method" for all situations, rather, there are several techniques with attendant advantages and disadvantages. An efficient sampling plan considers: the underlying processes; spatial, temporal, and statistical distributions of important parameters; and limited resources to answer the study's objectives.

29 NAL Call. No.: SB951.P47
Experimental assessment of pesticide leaching using undisturbed lysimeters. Kordel, W.; Herrchen, M.; Klein, W.
Essex : Elsevier Applied Science Publishers; 1991.
Pesticide science v. 31 (3): p. 337-348; 1991. Includes references.

Language: English

Descriptors: German federal republic; Bentazone; Cloethocarb; Carbon; Groundwater; Isotope labeling; Leaching; Lysimeters; Plants; Uptake; Water pollution; Law

Abstract: Outdoor lysimeter experiments are integrated studies, which consider the comprehensive influence of environmental variables on the mobility and fate in soil of a chemical and its plant uptake, and give valid information on its potential for groundwater contamination. The interpretation of the studies has to consider: (a) that migration behaviour under environmental conditions does not correspond with 'ideal chromatographic behaviour' and (b) that lysimeter studies include the variables of field experiments and are not fully standardized. The results of lysimeter studies on chloethocarb and bentazone are discussed.

30 NAL Call. No.: QH540.I52
Fate of HCH (BHC) in tropical paddy field: application test in South India. Tanabe, S.; Ramesh, A.; Sakashita, D.; Iwata, H.; Tatsukawa, R.; Mohan, D.; Subramanian, A.N.
Reading: Gordon and Breach Science Publishers; 1991.
International journal of environmental analytical chemistry v. 45 (1): p. 45-53; 1991. Includes references.

Language: English

Descriptors: Tamil nadu; Hch; Insecticide residues; Paddy soils; Volatilization; Soil pollution; Water pollution; Air; Oryza sativa

31 NAL Call. No.: 290.9 AM32T
Field testing and comparison of the PRZM and GLEAMS models. Smith, M.C.; Bottcher, A.B.; Campbell, K.L.; Thomas, D.L. St.

Joseph, Mich. : American Society of Agricultural Engineers; 1991 May. Transactions of the ASAE v. 34 (3): p. 838-847; 1991 May. Includes references.

Language: English

Descriptors: Georgia; Alachlor; Atrazine; Bromides; Field tests; Leaching; Groundwater; Pesticides; Precipitation; Runoff; Simulation models; Soil properties; Soil water

Abstract: The root/vadose zone transport models PRZM and GLEAMS were tested against an experimental data set. Parameters were not optimized or calibrated to produce the best fit. In all cases the measured and predicted peak concentrations agreed within an order of magnitude, and in most cases agreed within a factor of 2 to 3. This level of agreement between the models and the measured data is within the criteria for model acceptance suggested by the EPA. The small differences noted in simulated transport between the models are thought to be a result of differences in computational layering and chemical transport calculation methods.

32 NAL Call. No.: QD1.A45
Field-scale monitoring studies to evaluate mobility of pesticides in soils and groundwater.
Behl, E.; Eiden, C.A.
Washington, D.C. : The Society; 1991.
ACS Symposium series - American Chemical Society (465): p. 27-46; 1991. In the series analytic: Groundwater residue sampling design / edited by R.G. Nash and A.R. Leslie. Includes references.

Language: English

Descriptors: Pesticide residues; Water pollution; Groundwater; Soil analysis; Movement; Monitoring

Abstract: The United States Environmental Protection Agency (EPA) may require data from ground-water monitoring studies to support the registration of pesticide products under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) sections 3(c)5 and 3(c)7. Data from ground-water monitoring studies are used both to determine the likelihood that a pesticide will leach and to detect the presence of a pesticide in ground water from years of use. Fieldscale monitoring studies are necessary because patterns of pesticide degradation and movement in the field are influenced by a wide variety of natural environmental factors that cannot be duplicated in the laboratory. Monitoring studies have been required for 37 compounds when residues of the pesticide are reported in ground water or when the Agency has evaluated the pesticide as a potential "leacher," based on a review of it's persistence and mobility. This paper explains the history of ground-water monitoring requirements for the Office of Pesticide Programs of EPA and events and issues that led to

the development of the monitoring guidance. New directions in small-scale monitoring studies are described. Large-scale ground-water monitoring is mentioned briefly.

33 NAL Call. No.: R856.A1B46
Flow injection immunoanalysis (FIIA)--a new immunoassay format for the determination of pesticides in water.
Kramer, P.; Schmid, R.
Barking, Essex : Elsevier Applied Science Publishers; 1991.
Biosensors & bioelectronics v. 6 (3): p. 239-243; 1991.
Includes references.

Language: English

Descriptors: Atrazine; Drinking water; Groundwater; Surface water; Water quality; Testing; Enzyme immunoassay; Elisa

Abstract: This paper presents the development of a new heterogeneous enzyme immunoassay format for the detection of pesticides. It uses the technique of a flow injection system and is named flow injection immunoanalysis (FIIA). Results are demonstrated for the measurements of the herbicide atrazine, which belongs to the triazines, and the potential of this method compared with another immunoassay format (ELISA) is discussed.

34 NAL Call. No.: QD1.A45
Geostatistics for sampling designs and analysis.
Gutjahr, A.
Washington, D.C. : The Society; 1991.
ACS Symposium series - American Chemical Society (465): p. 48-90; 1991. In the series analytic: Groundwater residue sampling design / edited by R.G. Nash and A.R. Leslie.
Includes statistical data. Includes references.

Language: English

Descriptors: Pesticide residues; Groundwater; Water pollution; Sampling; Statistical analysis

Abstract: Spatial variability and its affect on groundwater flow and transport is an active research field. The characterization of that spatial (and possible temporal) variability can often be done effectively by using geostatistical techniques. The methods used and the implications for designs and analysis of groundwater transport and pollution problems will be discussed and illustrated. Discussion will include the incorporation of soft-data and their utility.

35 NAL Call. No.: 292.9 AM34
Ground water quality implications of soil conservation measures: an economic perspective.
Setia, P.; Piper, S.

Bethesda, Md. : American Water Resources Association; 1991 Mar. Water resources bulletin v. 27 (2): p. 201-208; 1991 Mar. Includes references.

Language: English

Descriptors: Corn belt of U.S.A.; Soil conservation; Groundwater; Water quality; Pesticides; Runoff; Leaching; Agricultural economics; Usda; Federal programs

Abstract: An evaluation of the intermedia movement of pesticides applied under various land management systems already in place, or to be implemented, under the Conservation Reserve and Conservation Compliance programs is presented. The simulation modeling approach followed in this analysis consists of a mathematical programming model and leaching/surface runoff, Pesticide Root Zone Model (PRZM) models. Special care was taken to ensure that the physical model was sensitive to the chemical characteristics of individual pesticides and the important physical changes brought about by different agricultural practices. Results show that, although these programs as now planned, increase farm income and achieve soil conservation goals, they may adversely affect ground water quality. Also, depending on soil and location characteristics, there are tradeoffs between surface and ground water quality implications. Hence, if these programs are to address water quality problems, the recommended practices must be evaluated for their impact on water quality, particularly in potentially vulnerable areas.

36 NAL Call. No.: QD1.A45
Groundwater contamination by atrazine and its metabolites: Risk assessment, policy, and legal implications.
Belluck, D.A.; Benjamin, S.L.; Dawson, T.
Washington, D.C. : The Society; 1991.
ACS Symposium series - American Chemical Society (459): p. 254-273; 1991. In the series analytic: Pesticide Transformation Products: Fate and significance in the environment / edited by L. Somasundaram and J.R. Coats.
Literature review. Includes references.

Language: English

Descriptors: U.S.A.; Canada; Atrazine; Contaminants; Degradation; Groundwater; Herbicide residues; Metabolites; Monitoring; Toxicity; Water pollution; Law; Literature reviews; Risk

37 NAL Call. No.: S544.3.O5O5
Groundwater quality and treatment.
Kizer, M.A.
Stillwater, Okla. : The Service; 1991 Mar.
OSU extension facts - Cooperative Extension Service, Oklahoma State University v.): 4 p.; 1991 Mar. In Subseries: Water Quality Series.

Language: English

Descriptors: Oklahoma; Groundwater; Quality; Testing; Pollutants; Toxins; Water; Hardiness; Nitrate; Fluoride; Iron; Corrosion; Chloride; Sulfate; Microorganisms

38 NAL Call. No.: QD1.A45 no.465
Groundwater residue sampling design.
Nash, Ralph G.,_1930-; Leslie, Anne R.,
American Chemical Society, Division of Agrochemicals, American Chemical Society, Division of Environmental Chemistry, American Chemical Society, Meeting_1990 :_Boston, Mass.)
Washington, D.C. : American Chemical Society,; 1991.
xii, 395 p. : ill., maps ; 24 cm. (ACS symposium series, 465).
Developed from a symposium sponsored by the Divisions of Agrochemicals and of Environmental Chemistry at the 199th National Meeting of the American Chemical Society, Boston, Massachusetts, April 22-27, 1990. Includes bibliographical references and indexes.

Language: English

Descriptors: Agricultural chemicals; Water, Underground; Soil pollution

39 NAL Call. No.: QD1.A45
Groundwater residue sampling: overview of the approach taken by government agencies.
Nash, R.G.; Helling, C.S.; Ragone, S.E.; Leslie, A.R.
Washington, D.C. : The Society; 1991.
ACS Symposium series - American Chemical Society (465): p. 1-13; 1991. In the series analytic: Groundwater residue sampling design / edited by R.G. Nash and A.R. Leslie.
Includes references.

Language: English

Descriptors: Pesticide residues; Groundwater; Water pollution; Sampling; Nitrogen

Abstract: Recognition that nitrogen applied as fertilizer may reach groundwater has been known for two to three decades. It is only in the past decade that evidence has become available suggesting pesticides may leach to groundwater, also. The evidence, though mostly anecdotal, has raised the nation's awareness of the potential for contamination of our water resources, the need to ascertain the extent of the problem, and ways to prevent it. Because of the complexity of natural systems, an interdisciplinary study approach is needed to provide information for cost-effective solutions to the problem.

40 NAL Call. No.: QD1.A45

Groundwater-sampling network to study agrochemical effects on water quality in the unconfined aquifer: southeastern Delaware.
Denver, J.M.
Washington, D.C. : The Society; 1991.
ACS Symposium series - American Chemical Society (465): p. 139-149; 1991. In the series analytic: Groundwater residue sampling design / edited by R.G. Nash and A.R. Leslie.
Includes references.

Language: English

Descriptors: Delaware; Groundwater; Agricultural chemicals; Water quality; Sampling

Abstract: Understanding local and regional groundwater-flow patterns was necessary to design a sampling network to study the movement and distribution of agrochemicals in the unconfined aquifer in southeastern Delaware. Clusters of wells completed at various depths were installed in the expected direction of local groundwater flow along a transect from the center of a 100-ha cultivated field toward a nearby stream. Contrary to expectations, groundwater flow in the study area is almost parallel to the stream, in the direction of regional flow. Consequently, agrochemicals from the site migrate along flow paths from source (recharge) areas to distant regional discharge areas and do not significantly influence the water quality in the stream. The sampling network was expanded upgradient and downgradient from the original site during a second phase of the study. The expanded network provided better understanding of agrochemical distribution relative to regional groundwater-flow patterns.

41 NAL Call. No.: TD420.A1E5
Historical inputs of polychlorinated biphenyls and other organochlorines to a dated lacustrine sediment core in rural England.
Sanders, G.; Jones, K.C.; Hamliton-Taylor, J.
Washington, D.C. : American Chemical Society; 1992 Sep.
Environmental science & technology v. 26 (9): p. 1815-1821; 1992 Sep. Includes references.

Language: English

Descriptors: England; Organochlorine pesticides; Lacustrine deposits; Sediment; Core sampling; Lakes; Rural areas

42 NAL Call. No.: GB701.W375 no.91-4006
Hydrology and the hypothetical effects of reducing nutrient applications of water quality in the Bald Eagle Creek Headwaters, southeastern Pennsylvania prior to implementation of agricultural best-management practices. Fishel, David K.; Langland, Michael J.; Truhlar, Mark V.
Susquehanna River Basin Commission, Pennsylvania, Dept. of Environmental Resources, Pennsylvania, Bureau of Soil and

Water Conservation, Geological Survey (U.S.),United States, Environmental Protection Agency, Chesapeake Bay Program
Lemoyne, Pa. : U.S. Geological Survey ; Denver, Colo. : Books and Open-File Reports Section [distributor],; 1991.
vi, 59 p. : ill. ; 28 cm. (Water-resources investigations report ; 91-4006). Water-Quality Study for the Chesapeake Bay Program. Includes bibliographical references (p. 57-59).

Language: English

Descriptors: Stream measurements; Water quality; Fertilizers; Hydrology

43 NAL Call. No.: QD241.T6
Impact of DDT spraying on the residue levels in soil, chicken, fish-pond water, carp, and human milk samples from malaria infested villages in Central Java.
Noegrohati, S.; Sardjoko; Untung, K.; Hammers, W.E.
Reading : Gordon and Breach Science Publishers; 1992.
Toxicological and environmental chemistry v. 34 (2/4): p. 237-251; 1992. Includes references.

Language: English

Descriptors: Java; Ddt; Pesticide residues; Environmental impact; Soil; Fowls; Eggs; Carp; Human milk

Abstract: Samples were collected at some villages in Central Java, sprayed with DDT to control outbreaks of malaria, 2, 8 and 24 years before sampling. The impacts of DDT spraying on the residue levels in soil and chicken, water and fish, and human milk, and the daily intake by nursed infants are evaluated.

44 NAL Call. No.: 290.9 AM32T
Impact of pesticides on shallow groundwater quality.
Gish, T.J.; Isensee, A.R.; Nash, R.G.; Helling, C.S.
St. Joseph, Mich. : American Society of Agricultural Engineers; 1991 Jul. Transactions of the ASAE v. 34 (4): p. 1745-1753; 1991 Jul. Includes references.

Language: English

Descriptors: Maryland; Alachlor; Atrazine; Carbofuran; Cyanazine; Groundwater; Monitoring; Movement in soil; Pesticide residues; Tillage; Water pollution; Water quality

Abstract: A three-year field study was initiated in 1986 to determine the impact of tillage practice, mode of pesticide application, and pesticide formulation on chemical transport. The 1.28-ha field site was divided into four plots, two each devoted to no-till and conventional tillage management. Pesticide transport was evaluated by monitoring the rate of change in concentrations of pesticides in a shallow perched water table, located approximately 1 m below the soil surface.

Pesticides monitored included atrazine, alachlor, cyanazine and carbofuran. All three herbicides were applied as a single broadcast spray: granular insecticide carbofuran was band-injected at planting.

45 NAL Call. No.: TD426.J68
Importance of closely spaced vertical sampling in delineating chemical and microbiological gradients in groundwater studies.
Smith, R.L.; Harvey, R.W.; LeBlanc, D.R.
Amsterdam : Elsevier; 1991 Feb.
Journal of contaminant hydrology v. 7 (3): p. 285-300. ill., maps; 1991 Feb. Includes references.

Language: English

Descriptors: Massachusetts; Groundwater pollution; Aquifers; Pollutants; Bacteria; Nitrates; Organic compounds; Profiles; Hydraulic conductivity; Movement in soil; Vertical movement; Samples; Collection; Gradients

46 NAL Call. No.: TD172.J6
Intrusion indices--a measure of groundwater quality.
Martin, D.F.; Norris, C.D.; Martin, B.B.
New York, N.Y. : Marcel Dekker; 1991.
Journal of environmental science and health : Part A : Environmental science and engineering v. 26 (6): p. 899-910; 1991. Includes references.

Language: English

Descriptors: Florida; Groundwater pollution; Chlorides; Sulfates; Nitrates; Aquifers; Water quality; Monitoring

47 NAL Call. No.: TD420.A1P7
Laboratory-scale ozonation of water contaminated with trace pesticides. Koga, M.; Kadokami, K.; Shinohara, R.
Oxford : Pergamon Press; 1992.
Water science and technology : a journal of the International Association on Water Pollution Research and Control v. 26 (9/11): p. 2257-2260; 1992. In the series analytic: Water Quality International '92. Part 5 / edited by M. Suzuki, et.al. Proceedings of the Sixteenth Biennial Conference of the International Association on Water Pollution Research and Control held May 24-30, 1992, Washington, D.C. Includes references.

Language: English

Descriptors: Water pollution; Pesticide residues; River water; Tap water; Samples; Gas chromatography; Mass spectrometry; Ozone; Hydrogen peroxide; Oxidation

48 NAL Call. No.: 275.29 IO9PA

Lessons from monitoring surveys.
Padgitt, S.C.
Ames, Iowa : The Service; 1991 Jan.
PM - Iowa State University, Cooperative Extension Service (1417): p. 125-129; 1991 Jan. In the series analytic: Integrated Farm Management Demonstration Program. 1990 Progress Report.

Language: English

Descriptors: Iowa; Integrated pest management; Groundwater pollution; Pesticides; Surveys

49 NAL Call. No.: 275.29 IO9PA
Lessons from monitoring surveys.
Padgitt, S.C.
Ames, Iowa : The Service; 1992 Jan.
PM - Iowa State University, Cooperative Extension Service (1467): p. 68-72; 1992 Jan.

Language: English

Descriptors: Iowa; Demonstration farms; Farm surveys; Farmers' attitudes; Nitrogen; Fertilizers; Weed control; Groundwater pollution

50 NAL Call. No.: S583.A7
Liquid chromatographic determination of pesticides in finished drinking waters: collaborative study.
Edgell, K.W.; Erb, E.J.; Longbottom, J.E.; Lopez-Avila, V.
Arlington, VA : AOAC International; 1992 Sep.
Journal of AOAC International v. 75 (5): p. 858-871; 1992 Sep. Includes references.

Language: English

Descriptors: Drinking water; Water; Comparisons; Water quality; Pesticide residues; Determination; Hplc; Performance testing

51 NAL Call. No.: QH540.I52
A liquid membrane enrichment technique for integrating field sampling in water applied to MCPA.
Mathiasson, L.; Nilve, G.; Ulen, B.
Reading: Gordon and Breach Science Publishers; 1991.
International journal of environmental analytical chemistry v. 45 (2): p. 117-125; 1991. Includes references.

Language: English

Descriptors: Mcpa; Herbicide residues; Water pollution; Analytical methods; Sampling; Liquid chromatography

52 NAL Call. No.: TD172.A7
Long-term monitoring of aldicarb residues in groundwater beneath a Canadian potato field.
Priddle, M.W.; Mutch, J.P.; Jackson, R.E.
New York, N.Y. : Springer-Verlag; 1992 Feb.
Archives of environmental contamination and toxicology v. 22 (2): p. 183-189; 1992 Feb. Includes references.

Language: English

Descriptors: Prince edward Island; Aldicarb; Insecticide residues; Groundwater pollution; Solanum tuberosum; Fields; Monitoring; Long term experiments

53 NAL Call. No.: SB610.2.B74
Measurement and modelling of pesticide residues at Rosemaund Farm. Williams, R.J.; Brooke, D.N.; Glendinning, P.J.; Matthiessen, P.; Mills, M.J.; Turnbull, A.
Surrey : BCPC Registered Office; 1991.
Brighton Crop Protection Conference-Weeds v. 2: p. 507-514; 1991. Conference held November 18-21, 1991, Brighton, England. Includes references.

Language: English

Descriptors: England; Pesticide residues; Water pollution; Models

54 NAL Call. No.: TD426.J68
Measurement of aldicarb degradation and movement in upstate New York and Massachusetts potato fields (U.S.A.).
Jones, R.L.; Kirkland, S.D.; Chancey, E.L.; Porter, K.S.; Walker, M.; Ferro, D.N.
Amsterdam : Elsevier; 1992 Aug.
Journal of contaminant hydrology v. 10 (3): p. 251-271; 1992 Aug. Includes references.

Language: English

Descriptors: New York; Massachusetts; Aldicarb; Insecticide residues; Degradation; Movement in soil; Soil pollution; Groundwater pollution; Solanum tuberosum; Fields

55 NAL Call. No.: QH540.I52
Measurement of bimolecular rate constants k(i) of the cholinesterase inactivation reaction by 55 insecticides and of the influence of various pyridiniumoximes on k(i).
Herzsprung, P.; Weil, L.; Niessner, R.
Reading: Gordon and Breach Science Publishers; 1992.
International journal of environmental analytical chemistry v. 47 (3): p. 181-200; 1992. Includes references.

Language: English

Descriptors: Insecticides; Carbamate insecticides; Insecticide residues; Organophosphorus insecticides; Cholinesterase; Enzyme activity; Inhibition; Bioassays; Acetylcholinesterase; Oximes; Water pollution; Oxidation

56 NAL Call. No.: QH540.J6
The Measurement of bioavailable phosphorus in agricultural runoff. Sharpley, A.N.; Troeger, W.W.; Smith, S.J.
Madison, Wis. : American Society of Agronomy; 1991 Jan.
Journal of environmental quality v. 20 (1): p. 235-238; 1991 Jan. Includes references.

Language: English

Descriptors: Oklahoma; Phosphorus fertilizers; Losses from soil systems; Runoff; Sediment; Surface water; Bioavailability; Extraction; Methodology; Nutrient uptake; Algae; Growth; Indicator plants; Water pollution

Abstract: The role of sediment-bound or particulate P in agricultural runoff in accelerating the biological productivity of surface water can be assessed if the biological availability of particulate P (PP) is known. Previous research has indicated amounts of P extracted from deposited river md lake sediments by 0.1 M NaOH to be correlated with P uptake by the alga Selenastrum capricornutum. This study investigates a modification of this extraction to allow routine quantification of potentially bioavailable particulate P (BPP) content of agricultural runoff from the Reddish Prairies and Rolling Red Plains land resource areas. In the proposed method, 20 mL of unfiltered runoff is shaken with 180 mL of 0.11 M NaOH for 17 b and BPP concentration calculated by subtraction of the soluble P (SP) concentration of the runoff sample. Total bioavailable P concentration (TBP) of runoff can be represented by BPP plus SP concentration. Growth of P-starved S. capricornutum, incubated for up to 29 d with runoff sediment from nine watersheds, as the sole P source, was correlated (r2 = 0.76 to 0.95) with potentially BPP content of the added sediment. Sample dilution had no effect on the amount of P extracted from runoff sediment by NaOH across a range in sediment concentration of the extraction medium, equivalent to that observed for 95% of the runoff events. If the sediment concentration of runoff exceeds 20 g L-1, at smaller runoff sample is used in the extraction. The results indicate the applicability of the proposed extraction method to quantify the bioavailability of P transported in agricultural runoff.

57 NAL Call. No.: TD420.A1E5
Method development for monitoring pesticides in enivornmental waters: liquid-solid extraction followed by liquid chromatography. Di Corica, A.; Marchetti, M.
Washington, D.C. : American Chemical Society; 1992 Jan.
Environmental science & technology v. 26 (1): p. 66-74; 1992 Jan. Includes references.

Language: English

Descriptors: Groundwater; River water; Pesticide residues; Monitoring; Analytical methods; Hplc

58 NAL Call. No.: TD172.A7
A method for the trace analysis of naptalam (N-1-naphthylphthalamic acid) in water.
Wolfe, M.F.; Seiber, J.N.
New York, N.Y. : Springer-Verlag; 1992 Jul.
Archives of environmental contamination and toxicology v. 23 (1): p. 137-141; 1992 Jul. Includes references.

Language: English

Descriptors: Water pollution; Naptalam; Herbicide residues; Chemical analysis; Water; Sampling; Analytical methods

59 NAL Call. No.: QD1.A45
Minimum cost sample allocation.
Mason, R.E.; Boland, J.
Washington, D.C. : The Society; 1991.
ACS Symposium series - American Chemical Society (465): p. 91-107; 1991. In the series analytic: Groundwater residue sampling design / edited by R.G. Nash and A.R. Leslie. Includes statistical data. Includes references.

Language: English

Descriptors: Pesticide residues; Groundwater; Water pollution; Statistical analysis; Models; Variance; Sampling

Abstract: A procedure for determining the minimum cost allocation of samples subject to multiple variance constraints is described. The procedure is illustrated using information developed for the National Pesticide Survey conducted by the United States Environmental Protection Agency.

60 NAL Call. No.: TD172.A7
Mitotic toxicity, sister chromatid exchange, and rec assay of pesticides. Kuroda, K.; Yamaguchi, Y.; Endo, G.
New York, N.Y. : Springer-Verlag; 1992 Jul.
Archives of environmental contamination and toxicology v. 23 (1): p. 13-18; 1992 Jul. Includes references.

Language: English

Descriptors: Japan; Pesticides; Drinking water; Mitosis; Toxicity; Sister chromatid exchange; Microbial activities; Dna repair; Tests

61 NAL Call. No.: QD1.A45

Monitoring agrochemical transport into shallow unconfined aquifers. Staver, K.W.; Brinsfield, R.B.
Washington, D.C. : The Society; 1991.
ACS Symposium series - American Chemical Society (465): p. 264-278; 1991. In the series analytic: Groundwater residue sampling design / edited by R.G. Nash and A.R. Leslie.
Includes references.

Language: English

Descriptors: Groundwater; Water pollution; Agricultural chemicals; Monitoring; Leaching

Abstract: Recent documentation of agrochemical contamination of groundwater has suggested that agricultural practices need to be modified in order to reduce contaminant leaching from the root zone. Developing agricultural practices which maintain groundwater quality requires quantitative sampling approaches that allow determination of contaminant transport rates for specific practices. Increasingly widespread evidence of the transient and spatially variable nature of solute transport in the vadose zone suggests that sampling groundwater may provide the most reliable method for determining solute leaching rates, particularly where the water table is located close to the soil surface. Hydraulic gradients in the groundwater component of a vadose zone-unconfined aquifer flow system are generally lower and more stable than those in the unsaturated region, resulting in less transient flow conditions during recharge periods. As the thickness or water holding capacity of the vadose zone increases, the transport of solutes from the root zone to groundwater becomes less direct, requiring more solute data collection from the unsaturated region of the soil profile. Water and solute storage in the vadose zone immediately above the water table will alter leachate solute levels during recharge, to an extent determined by the water holding characteristics of the profile. Stratification of groundwater solute levels near the water table as a consequence of changes in root zone leaching rates requires discrete well screen placement based on water table fluctuation patterns if groundwater sampling is to be used to establish leaching rates for specific agricultural practices.

62 NAL Call. No.: 100 AR42F
Monitoring Northwest Arkansas springs for herbicides, nitrates and phosphates. Dehart, B.A.; Lavy, T.L.; Mattice, J.D.
Fayetteville, Ark. : The Station; 1991 Jan.
Arkansas farm research - Arkansas Agricultural Experiment Station v. 40 (1): p. 9; 1991 Jan.

Language: English

Descriptors: Arkansas; Water pollution; Springs (water); Herbicides; Nitrates; Phosphates

63 NAL Call. No.: 100 AR42F
Monitoring Northwest Arkansas springs for herbicides, nitrates, and phosphates.
Dehart, B.A.; Lavy, T.L.; Mattice, J.D.
Fayetteville, Ark. : The Station; 1991 Jan.
Arkansas farm research - Arkansas Agricultural Experiment Station v. 40 (1): p. 9; 1991 Jan.

Language: English

Descriptors: Arkansas; Springs (water); Water pollution; Herbicides; Nitrates; Phosphates

64 NAL Call. No.: QH545.A1E58
Monitoring organochlorines in blood of sharp-shinned hawks (Accipiter striatus) migrating through the Great Lakes.
Elliott, J.E.; Shutt, L.
Tarrytown, N.Y. : Pergamon Press; 1993 Feb.
Environmental toxicology and chemistry v. 12 (2): p. 241-250; 1993 Feb. Includes references.

Language: English

Descriptors: Ontario; Michigan; Accipiter striatus; Organochlorine pesticides; Polychlorinated biphenyls; Blood plasma; Seasonal migration; Spring; Autumn; Residues; Persistence; Seasonal fluctuations; Sex differences; Age; Predatory birds; Indicator species

65 NAL Call. No.: aZ5071.N3
Monitoring water for agricultural wastes and agrichemicals: January 1982-July 1990.
Kuske, J.
Beltsville, Md. : The Library; 1991 Mar.
Quick bibliography series - U.S. Department of Agriculture, National Agricultural Library (U.S.). (91-52): 25 p.; 1991 Mar. Bibliography.

Language: English

Descriptors: Water quality; Agricultural wastes; Agricultural chemicals; Bibliographies

66 NAL Call. No.: aZ5071.N3
Monitoring water for agricultural wastes and agrichemicals-- January 1990-June 1992.
Holloway, D.
Beltsville, Md. : The Library; 1992 Sep.
Quick bibliography series - U.S. Department of Agriculture, National Agricultural Library (U.S.). (92-68): 62 p.; 1992 Sep. Updates QB 91-52. Bibliography.

Language: English

Descriptors: Water quality; Agricultural wastes; Groundwater pollution; Agricultural chemicals; Bibliographies

67 NAL Call. No.: TD403.G7
Multivariate geostatistical analysis of ground-water contamination: a case history.
Istok, J.D.; Smyth, J.D.; Flint, A.L.
Dublin, Ohio : Ground Water Pub. Co; 1993 Jan.
Ground water v. 31 (1): p. 63-74; 1993 Jan. Includes references.

Language: English

Descriptors: Oregon; Groundwater pollution; Pesticide residues; Nitrates; Aquifers; Water; Sampling; Multivariate analysis

68 NAL Call. No.: TD223.N36 1992
Nutrient management educational initiative: using demonstration and research plots and the Penn State nitrogen quick test in the Upper Conestoga RCWP. Anderson, R.
Washington, DC : U.S. Environmental Protection Agency; 1992.
Proceedings: the National RCWP Symposium : 10 years of controlling agricultural nonpoint source pollution : the RCWP experience : Sept 13-17, 1992, Orlando, Florida. p. 321-331; 1992. Includes references.

Language: English

Descriptors: Pennsylvania; Water quality; Water management; Nitrogen content

69 NAL Call. No.: 381 J8223
Performance of the Goulden large-sample extractor in multiclass pesticide isolation and preconcentration from stream water.
Foster, G.D.; Foremen, W.T.; Gates, P.M.
Washington, D.C. : American Chemical Society; 1991 Sep.
Journal of agricultural and food chemistry v. 39 (9): p. 1618-1622; 1991 Sep. Includes references.

Language: English

Descriptors: Pesticide residues; Chemical analysis; Water; Extraction; Extractors

Abstract: The reliability of the Goulden large-sample extractor in preconcentrating pesticides from water was evaluated from the recoveries of 35 pesticides amended to filtered stream waters. Recoveries greater than 90% were observed for many of the pesticides in each major chemical class, but recoveries for some of the individual pesticides varied in seemingly unpredictable ways. Corrections cannot yet be factored into liquid-liquid extraction theory to account

for matrix effect, which were apparent between the two stream waters tested. The Goulden large-sample extractor appears to be well suited for rapid chemical screening applications, with quantitative analysis requiring special quality control considerations.

70 NAL Call. No.: TD172.A7
Pesticide and polychlorinated biphenyl residues in waters at the mouth of the Grand, Saugeen, and Thames Rivers, Ontario, Canada, 1986-1990. Frank, R.; Logan, L.; Clegg, B.S.
New York, N.Y. : Springer-Verlag; 1991 Nov.
Archives of environmental contamination and toxicology v. 21 (4): p. 585-595; 1991 Nov. Includes references.

Language: English

Descriptors: Ontario; River water; Water pollution; Pesticide residues; Polychlorinated biphenyls; Agricultural land; Watersheds; Water; Samples; Chemical analysis; Soil conservation; Water conservation

71 NAL Call. No.: QD241.T6
Pesticide transport modelling in soil for risk assessment of groundwater contamination.
Matthies, M.; Behrendt, H.
London : Gordon and Breach Science Publishers; 1991.
Toxicological and environmental chemistry v. 31/32: p. 357-365; 1991. Includes references.

Language: English

Descriptors: 2,4,5-t; Pesticide residues; Movement in soil; Soil water movement; Groundwater pollution

Abstract: The risk of groundwater contamination with pesticides applied to soil surface depends on the soil properties, the agricultural practices, the climatic influences, and on the properties of the pesticides themselves. The EXSOL model was developed for the simulation of the transport and fate of pesticides and organic in soils. The dynamics of mobility, accumulation and degradation can be studied under various soil and climatic conditions. Transient water flow is provided from a simulation model of the field water balance. The percentages of the herbicide 2,4-5-trichlorophenoxyacetic acid in a luvisol soil after a single application in summer are compared with model calculations using sorption coefficients from laboratory column studies. The calculated percentages lie within the measured range, except for those in the deeper soil layer. The underestimation can be explained with preferential flow in macropores which may have occurred during the heavy rainfall six days after application.

72 NAL Call. No.: 100 AR42F

Pesticides monitored in surface and well water samples.
Lavy, T.L.; Senseman, S.A.; Mattice, J.D.; Skulman, B.W.; Daniel, T.C. Fayetteville, Ark. : The Station; 1992 Jul.
Arkansas farm research - Arkansas Agricultural Experiment Station v. 41 (4): p. 16-17; 1992 Jul.

Language: English

Descriptors: Arkansas; Pesticide residues; Groundwater pollution; Surface water; Water pollution; Atrazine; Monitoring

73 NAL Call. No.: HD1773.A2N6
Physical and economic model integration for measurement of the environmental impacts of agricultural chemical use.
Antle, J.M.; Capalbo, S.M.
Morgantown, W.Va. : The Northeastern Agricultural and Resource Economics Association; 1991 Apr.
Northeastern journal of agricultural and resource economics v. 20 (1): p. 68-82; 1991 Apr. Paper submitted in response to call for papers on the theme "The Effects of Agricultural Production on Environmental Quality.". Includes references.

Language: English

Descriptors: Groundwater; Surface water; Water quality; Agricultural chemicals; Usage; Environmental impact; Measurement; Agricultural production; Cost benefit analysis; Models

74 NAL Call. No.: 290.9 AM32T
Preferential movement of atrazine and cyanazine under field conditions. Gish, T.J.; Helling, C.S.; Mojasevic, M.
St. Joseph, Mich. : American Society of Agricultural Engineers; 1991 Jul. Transactions of the ASAE v. 34 (4): p. 1699-1705; 1991 Jul. Includes references.

Language: English

Descriptors: Maryland; Atrazine; Cyanazine; Field tests; Groundwater; Movement in soil; Silt loam soils; Water pollution

Abstract: The relative importance of preferential pesticide transport in agricultural soils was determined in a two-phase study conducted on a silt loam soil in Maryland. The first phase (1984) consisted of evaluating persistence and mobility of atrazine [2-chloro-4-(ethylamino)-6-(isopropylamino)-s-triazine] and cyanazine [2-chloro-4-(l-cyano-l-methylethylarnino)-6-ethylamino-s-triazine] under no-tillage corn management. The second phase (1986) dealt with persistence and mobility of the same herbicides on fallow tilled soil subjected to frequent, large water inputs. Although preferential flow was observed under both treatments and water regimes, the no-till system

had the most rapid movement of herbicide relative to water inputs. Additionally, all treatments indicated that the greatest potential movement of surface-applied pesticide occurred with the first water input subsequent to application. Once the pesticide has been preferentially transported, it appears to diffuse into the soil matrix, where it is no longer subject to significant preferential movement. Based on field data and calculated mass balance, persistence of atrazine and cyanazine was unaffected by tillage practice and water regime.

75 NAL Call. No.: QH540.N3
Principles of monitoring and analysis.
Nachtnebel, H.P.; Duckstein, L.; Bogardi, I.
Berlin, W. Ger. : Springer-Verlag; 1991.
NATO ASI series : Series G : Ecological sciences v. 30: p. 115-127; 1991. In the series analytic: Nitrate contamination: Exposure, consequence, and control / edited by I. Bogardi and R.D. Kuzelka. Proceedings of the NATO Advanced Research Workshop on Nitrate Contamination: Exposure, Consequences, and Control, September 9-14, 1990, Lincoln, Nebraska. Includes references.

Language: English

Descriptors: Nitrate; Nitrate fertilizers; Groundwater pollution; Water quality; Monitoring

76 NAL Call. No.: 275.29 W27P
Protect your groundwater: survey your homestead environment.
Adams, E.B.
Pullman, Wash. : The Service; 1991 Sep.
Extension bulletin - Washington State University, Cooperative Extension Service (1631): 4 p.; 1991 Sep.

Language: English

Descriptors: Washington; Groundwater; Groundwater pollution; Farms; Environmental assessment; Agricultural chemicals

77 NAL Call. No.: 275.29 W27P
Protecting groundwater: managing livestock on small acreage.
Schmidt, J.L.; Wolfley, B.F.
Pullman, Wash. : The Service; 1992 Oct.
Extension bulletin - Washington State University, Cooperative Extension Service (1713): 6 p.; 1992 Oct.

Language: English

Descriptors: Washington; Groundwater; Water pollution; Farm management; Practice; Feedlot wastes; Fencing; Grazing; Soil test values; Weed control; Pastures

78 NAL Call. No.: 275.29 IO9PA

Protecting our water quality with effective soil sampling.
Miller, G.; Zahn, D.R.
Ames, Iowa : The Service; 1991 Jul.
PM - Iowa State University, Cooperative Extension Service (1428c): 4 p.; 1991 Jul. Includes references.

Language: English

Descriptors: Soil analysis; Sampling; Fertilizers; Water quality

79 NAL Call. No.: S544.3.N9C46
Protecting your ground water through farmstead assessment: a self-help checklist.
Hermes, M.
Fargo, N.D. : The University; 1992 Jan.
NDSU Extension Service [publication] - North Dakota State University (AE-1027): 4 p.; 1992 Jan.

Language: English

Descriptors: Groundwater pollution; Wells; Agricultural chemicals; Farm storage; Handling; Waste disposal; Checklists

80 NAL Call. No.: RA1270.P35A1
Quantification of alachlor in water by a novel magnetic particle-based ELISA. Lawruk, T.S.; Hottenstein, C.S.; Herzog, D.P.; Rubio, F.M. New York, N.Y. : Springer-Verlag; 1992 May.
Bulletin of environmental contamination and toxicology v. 48 (5): p. 643-650; 1992 May. Includes references.

Language: English

Descriptors: Alachlor; Herbicide residues; Groundwater; Water quality; Testing; Magnetic separation; Elisa; Quantitative analysis

81 NAL Call. No.: 4 AM34P
Relationships between corn yields and soil nitrate in late spring. Binford, G.D.; Blackmer, A.M.; Cerrato, M.E.
Madison, Wis. : American Society of Agronomy; 1992 Jan.
Agronomy journal v. 84 (1): p. 53-59; 1992 Jan. Includes references.

Language: English

Descriptors: Iowa; Zea mays; Nitrogen fertilizers; Application rates; Nitrate nitrogen; Crop yield; Grain; Soil fertility; Spring; Sampling; Depth; Plant height; Crop growth stage

Abstract: Recent studies have shown good correlations between corn (Zea mays L.) yields and concentrations of NO3, in the surface 30-cm layer of soil in late spring. Here we report additional correlations and evaluate the benefits of sampling

to 60 cm instead of to 30 cm only. The study involved 45 site-years (1346 plot-years) of data collected in 1987, 1988, and 1989 in Iowa. Weather conditions were dryer than normal, with a severe drought occurring in 1988. Each site-year included seven to 10 rates of N applied before planting. Samples representing the surface 0- to 30-cm and the 30- to 60-cm layers of soils were collected when corn plants were 15 to 30 cm tall. Nitrate concentrations in these soil layers were correlated with grain yields. The deeper sampling slightly improved the correlations between grain yields and soil NO3, concentrations, but the advantage was probably not great enough to justify the costs of the deeper sampling. The critical concentration of NO3, was 23 to 26 mg N kg-1 in the surface 30-cm layer or soil and 16 to 19 mg N kg-1 in the surface 60-cm layer of soil. Overall, the results support the idea that a soil test based on concentrations of NO3, in the surface 30-cm layer of soil when corn plants are 15 to 30 cm tall has great promise for improving N management during corn production.

82 NAL Call. No.: TD172.J61
Residue levels of chlorinated hydrocarbon compounds in water and sediment samples from Nile branches in the Delta, Egypt.
El-Gendy, K.S.; Abdalla, A.A.; Aly, H.A.; Tantawy, G.; El-Sebae, A.H. New York, N.Y. : Marcel Dekker; 1991.
Journal of environmental science and health : Part B : Pesticides, food contaminants, and agricultural wastes v. 26 (1): p. 15-36. maps; 1991. Includes references.

Language: English

Descriptors: Egypt; Chlorinated hydrocarbons; Pesticide residues; Water pollution; River water; Sediment; Samples

83 NAL Call. No.: SB951.P47
Residues of the algicide endothal in water, soil and rice, after paddy field applications.
Maini, P.
Essex : Elsevier Applied Science Publishers; 1992.
Pesticide science v. 34 (1): p. 45-52; 1992. Includes references.

Language: English

Descriptors: Italy; Endothal; Herbicide residues; Paddy soils; Rice; Ponds; Flooded rice; Fields; Formulations; Application rates; Application methods; Degradation; Half life; Algicides; Monitoring

Abstract: In order to obtain residue data from the application of the algicide endothal in Italian rice paddy fields, two experiments were carried out using a 50 g kg-1 granular formulation in a small pond and the same granular and two liquid formulations in actual paddy fields of the Italian rice growing area. Endothal decay in the pond water was very

rapid, reaching residue levels of 0.01-0.02 mg litre-1 in two days and 0.004-0.01 mg litre-1 at the third day. The muddy soil of the pond was free from measurable endothal residues (< 0.02 mg kg-1). In the paddy-field waters, the endothal decay was slower, with an average half-life time of 3.3 days, independently of the type of formulation. The actual residues in water after 6 days ranged from 0.3 to 1.3 mg litre-1 according to the initial amount of product applied, and, consequently, to the initial concentration in water. Rice samples collected at the normal harvest time from the two paddy fields, treated with three different formulations, showed no endothal residue at the minimum detectable level of 0.01 mg kg-1.

84 NAL Call. No.: NBULD3656.5 1992 L4459
Risk assessment and risk management for nitrate-contaminated groundwater supplies.
Lee, Yong W.
1992; 1992.
x, 136 leaves : ill. ; 28 cm. Includes bibliographical references.

Language: English

85 NAL Call. No.: QD1.A45
Sampling groundwater in a northeastern U.S. watershed.
Pionke, H.B.; Urban, J.B.; Gburek, W.J.; Rogowski, A.S.; Schnabel, R.R. Washington, D.C. : The Society; 1991.
ACS Symposium series - American Chemical Society (465): p. 222-241; 1991. In the series analytic: Groundwater residue sampling design / edited by R.G. Nash and A.R. Leslie.
Includes references.

Language: English

Descriptors: Northeastern states of U.S.A.; Groundwater; Agricultural chemicals; Nitrates; Water pollution; Sampling; Watersheds

Abstract: The sampling of groundwater, particularly for nitrates, is examined in a flow system and watershed context. A groundwater flow dominated watershed located in east-central Pennsylvania provides an example and basis for this analysis. Groundwater sampling is also viewed from a groundwater recharge (percolate) and discharge (streamflow) perspective. Some spatial and timing controls are described and examined in terms of where and when to sample.

86 NAL Call. No.: RA1270.P35A1
Seasonal fluctuations of organochlorine compounds in the water of the Strimon River (N. Greece).
Kilikidis, S.D.; Kamarianos, A.P.; Karamanlis, X.N.
New York, N.Y. : Springer-Verlag; 1992 Sep.
Bulletin of environmental contamination and toxicology v. 49

(3): p. 375-380; 1992 Sep. Includes references.

Language: English

Descriptors: Greece; Organochlorine pesticides; Polychlorinated biphenyls; River water; Water pollution; Mytilus galloprovincialis; Monitoring; Seasonal fluctuations

87 NAL Call. No.: QH545.A1E58
A simple stream-side test system for deteriming acute lethal and behavioral effects of pesticides on aquatic insects.
Kreutzweiser, D.P.; Capell, S.S.
Elmsford, N.Y. : Pergamon Press; 1992 Jul.
Environmental toxicology and chemistry v. 11 (7): p. 993-999; 1992 Jul. Paper presented at the "Symposium on Structure-Activity and Structure-Property Relationships in Environmental Chemistry and Toxicology, Pacifichen '89," December 17-22, 1989, Honolulu, Hawaii. Includes references.

Language: English

Descriptors: Bacillus thuringiensis subsp. kurstaki; Hexazinone; Permethrin; Triclopyr; Aquatic insects; Toxicity; Tests; Animal behavior; Streams; Pesticide residues; Nontarget organisms; Nontarget effects; Water pollution

88 NAL Call. No.: 56.9 SO32
Small-scale ground water monitoring for 1,3-dichloropropene in southwest Florida.
Obreza, T.A.; Ontermaa, E.O.
S.l. : The Society; 1991.
Proceedings - Soil and Crop Science Society of Florida v. 50: p. 94-98; 1991. Paper presented at the "Symposium on Reality of Sustainable Agriculture in Florida, September 26-28, 1990, Daytona Beach, FLorida. Includes references.

Language: English

Descriptors: Florida; Water pollution; Groundwater; 1,3-dichloropropene; Pesticide residues

89 NAL Call. No.: 56.8 SO3
Soil sampling and nutrient variability in dairy animal holding areas. Anderson, D.L.; Hanlon, E.A.; Miller, O.P.; Hoge, V.R.; Diaz, O.A. Baltimore, Md. : Williams & Wilkins; 1992 Apr.
Soil science v. 153 (4): p. 314-321; 1992 Apr. Includes references.

Language: English

Descriptors: Florida; Spodosols; Sandy soils; Surface layers; Soil testing; Sampling; Assessment; Nutrient content; Phosphorus; Potassium; Calcium; Aluminum; Iron; Sodium; Soil organic matter; Soil ph; Soil variability; Spatial variation;

Nutrient availability; Nutrient retention; Movement in soil; Spodic horizons; Dairy wastes; Population density; Topography; Water pollution

90 NAL Call. No.: QD1.A45
Soil-pan method for studying pesticide dissipation on soil.
Hill, B.D.; Inaba, D.J.; Schaalje, G.B.
Washington, D.C. : The Society; 1991.
ACS Symposium series - American Chemical Society (465): p. 358-366; 1991. In the series analytic: Groundwater residue sampling design / edited by R.G. Nash and A.R. Leslie.
Includes references.

Language: English

Descriptors: Pesticide residues; Water pollution; Soil; Sampling

Abstract: To predict the amount of pesticide that could leach through the soil and contaminate groundwater requires information about the residue levels at the soil surface over time. A soil-pan method has been developed to estimate surface residues and their dissipation rates. An indoor spray chamber is used to apply the pesticide to soil contained in metal flats, the treated flats are moved outdoors and set into a field, and the soil is sampled over the season by taking four cores per flat. Using this method, it was determined that the emulsifiable concentrate formulation of deltamethrin dissipated faster than the Flowable formulation. When the soil-pan method was compared with a field-plot method, the dissipation of lambda-cyhalothrin was faster in the soil pans. Monitoring the soil temperature and moisture indicated that both were slightly higher in the soil pans than in the adjacent field plots. At present, the soil-pan method is best suited for the direct comparison of different treatments.

91 NAL Call. No.: 56.8 SO39
Some concepts concerning soil site assessment for water quality. Mausbach, M.J.; Nielsen, R.D.
Madison, Wis. : Soil Science Society of America; 1991.
Soil survey horizons v. 32 (1): p. 18-25; 1991. Includes references.

Language: English

Descriptors: Water quality; Land evaluation; Surface water; Contamination; Groundwater pollution; Contaminants; Nutrients; Pesticides; Site factors; Soil types; Runoff; Soil water; Geometry; Vertical movement; Horizontal infiltration; Slope; Geomorphology; Surface layers; Soil properties; Soil formation; Land use; Land management; Tillage; Spatial variation; Temporal variation; Horizons; Profiles; Catchment hydrology

92 NAL Call. No.: QD1.A45
Study design to investigate and simulate agrochemical movement and fate in groundwater recharge.
Asmussen, L.E.; Smith, C.N.
Washington, D.C. : The Society; 1991.
ACS Symposium series - American Chemical Society (465): p. 150-164; 1991. In the series analytic: Groundwater residue sampling design / edited by R.G. Nash and A.R. Leslie.
Includes references.

Language: English

Descriptors: Georgia; Groundwater; Agricultural chemicals; Water quality; Water pollution; Sampling; Mathematical models

Abstract: The vulnerability of aquifers to contamination by agrochemicals is relatively high in the southeastern Coastal Plain. Transport and fate of agrochemicals in either the root, unsaturated, or saturated zones can be simulated by existing mathematical models. However, a linked mathematical model is needed to simulate the movement and degradation from the point of application through the unsaturated zone, and into groundwater. The United States Geological Survey and Agricultural Research Service initiated a cooperative investigation in 1986. In 1988, the United States Environmental Protection Agency joined the research investigation. These agencies are sharing technical expertise and resources to develop an understanding of physical, chemical, and biological processes and to evaluate their spatial and temporal variability; and to develop and validate linked model(s) that would describe chemical transport and fate. Study sites have been selected in the Fall Line Hills district of the Coastal Plain province. The Claiborne aquifer recharge area is located in this district near Plains, Georgia. Instrumentation to measure water and chemical transport has been installed.

93 NAL Call. No.: SB951.P47
Study of pesticides in waters from a Chalk catchment, Cambridgeshire. Clark, L.; Gomme, J.; Hennings, S.
Essex : Elsevier Applied Science Publishers; 1991.
Pesticide science v. 32 (1): p. 15-33; 1991. Includes references.

Language: English

Descriptors: Uk; Water pollution; Water quality; Pesticides; Triazines; Usage; Research projects; Watersheds; Environmental assessment; River water; Rain; Groundwater; Monitoring; Catchment hydrology; Unsaturated flow; Chalk soils

Abstract: WRc are undertaking a long term study of pesticides in the aquatic environment. A study of the pesticides in the rain, water and groundwater of the Granta catchment in Cambridgeshire is now in its fourth year. Preliminary results are presented and the concentrations of agricultural

pesticides in environmental waters are related to the land-use is within the catchment. The Granta study is incomplete but certain anomalies in pesticides occurrence can be identified. In particular, the triazines are much more prevalent in the groundwater than their agricultural usage would lead one to expect. The limited data base gives problems with modelling the contaminant transport in groundwater. The present situation is reviewed and areas of future work necessary to fulfil the modelling needs identified. These areas of study are: the historical land-use and pesticide usage; the groundwater quality data base; the pesticide transport in the unsaturated zone.

94 NAL Call. No.: QH545.A1E58
Surfactants at low concentrations stimulate biodegradation of sorbed hydrocarbons in samples of aquifer sands and soil slurries. Aronstein, B.N.; Alexander, M.
Tarrytown, N.Y. : Pergamon Press; 1992 Sep.
Environmental toxicology and chemistry v. 11 (9): p. 1227-1233; 1992 Sep. Includes references.

Language: English

Descriptors: Nonionic surfactants; Microbial degradation; Phenanthrene; Biphenyl; Sand; Silt loam soils; Slurries; Desorption; Mineralization; Nitrogen; Phosphorus; Stimulation; Water; Pollution

95 NAL Call. No.: QD1.A45
Tension lysimeters for collecting soil percolate.
Angle, J.S.; McIntosh, M.S.; Hill, R.L.
Washington, D.C. : The Society; 1991.
ACS Symposium series - American Chemical Society (465): p. 290-299; 1991. In the series analytic: Groundwater residue sampling design / edited by R.G. Nash and A.R. Leslie. Includes references.

Language: English

Descriptors: Groundwater; Water pollution; Agricultural chemicals; Lysimeters; Sampling; Soil water; Movement

Abstract: Tension lysimeters are widely used to sample soil percolate. A vacuum is applied to the interior of a porous ceramic cup and soil percolate is pulled into the cup and held until collection. Many questions, however, exist as to the proper use of lysimeters. Foremost among the questions is the source of water which is pulled into the lysimeter. Lysimeters generally collect larger volumes of percolate during peak flow events when soil water is being retained at lower suctions, and thus may not accurately estimate the magnitude of solute losses. Problems also exist in the use of lysimeters to measure specific pollutants. Many pesticides are volatile, especially under reduced pressure, and concentrations are likely to be underestimated using tension lysimeters. Nutrient

analysis of percolate collected with lysimeters is often skewed due to adsorption or desorption of inorganic ions. An additional problem exists with the analysis of resulting data. Since sampling times are not randomized, usual assumptions for analyses, such as independence of error, may not be valid. Measurements are often lognormally distributed and thus require transformation.

96 NAL Call. No.: RA1270.P35A1
Total arsenic in water, fish, and sediments from Lake Xolotlan, Managua, Nicaragua.
Lacayo, M.L.; Cruz, A.; Calero, S.; Lacayo, J.; Fomsgaard, I.
New York, N.Y. : Springer-Verlag; 1992 Sep.
Bulletin of environmental contamination and toxicology v. 49 (3): p. 463-470; 1992 Sep. Includes references.

Language: English

Descriptors: Nicaragua; Arsenicals; Lakes; Water; Fishes; Sediment; Measurement

97 NAL Call. No.: RA565.A1J6
Toxicity assessment of atrazine, alachlor, and carbofuran and their respective environmental metabolites using microtox.
Kross, B.C.; Vergara, A.; Raue, L.E.
Washington, D.C. : Hemisphere Publishing; 1992 Sep.
Journal of toxicology and environmental health v. 37 (1): p. 149-159; 1992 Sep. Includes references.

Language: English

Descriptors: Alachlor; Atrazine; Carbofuran; Metabolites; Toxicity; Bioassays; Photobacterium; Groundwater pollution; Drinking water

98 NAL Call. No.: TD403.G7
Tracer test evaluation of a drainage ditch capture zone.
Chambers, L.W.; Bahr, J.M.
Dublin, Ohio : Ground Water Pub. Co; 1992 Sep.
Ground water v. 30 (5): p. 667-675; 1992 Sep. Includes references.

Language: English

Descriptors: Wisconsin; Groundwater pollution; Agricultural chemicals; Spread; Prevention; Drainage; Ditches; Tracers; Iodide; Bromide; Tests; Prediction; Capacity; Analytical methods; Models; Movement in soil

99 NAL Call. No.: QH540.J6
Transformation and sorption of 1,2-dibromo-3-chloropropane in subsurface samples collected at Fresno, California.
Deeley, G.M.; Reinhard, M.; Stearns, S.M.

Madison, Wis. : American Society of Agronomy; 1991 Jul.
Journal of environmental quality v. 20 (3): p. 547-556; 1991 Jul. Includes references.

Language: English

Descriptors: California; Dbcp; Transformation; Sorption; Groundwater; Aquifers; Slurries; Temperature

Abstract: The transformation rate of 1,2-dibromo-3-chloropropane (DBCP) was determined in phosphate buffer solution, in groundwater, and in groundwater/aquifer solid slurries from ambient temperatures to 72 degrees C. From the disappearance data, the apparent Arrhenius constants for DBCP transformation were calculated and found to decrease in Ea with temperature from 19.2 (plus or minus 2.4) kcal mol-1 in the 55 to 72 degrees C range to 12.5 (plus or minus 1.8) kcal mol-1 in the 21 to 55 degrees C range. Low sorption values were an indication that sorption does not play a major role in the aquifer being studied. No significant difference in the disappearance rates was observed in the buffer solution (corrected for buffer effects) and in groundwater with and without solids added. However, in the phosphate buffer solution, dehydrohalogenation appeared to be the favored transformation process in contrast to the groundwater systems where hydrolysis seemed to predominate. This apparent influence of dissolved constituents or temperature on transformation mechanism or rate may restrain the use of direct extrapolation of data between systems. Applying the transformation data from this study to median field parameters, a DBCP half-life of 6.1 yr was calculated for typical groundwater conditions in California (pH 7.8 and 21.1 degrees C).

100 NAL Call. No.: TD420.A1E5
Use of extraction disks for trace enrichment of various pesticides from river water and simulated seawater samples followed by liquid chromatography-rapid-scanning UV-visible and thermospray-mass spectrometry detection.
Barcelo, D.; Durand, G.; Bouvot, V.; Nielen, M.
Washington, D.C. : American Chemical Society; 1993 Feb.
Environmental science & technology v. 27 (2): p. 271-277; 1993 Feb. Includes references.

Language: English

Descriptors: Pesticides; Water pollution; River water; Sea water

101 NAL Call. No.: QD1.A45
Well installation and sampling procedures for monitoring groundwater beneath agricultural fields.
Kirkland, S.D.; Jones, R.L.; Norris, F.A.
Washington, D.C. : The Society; 1991.

ACS Symposium series - American Chemical Society (465): p. 214-221; 1991. In the series analytic: Groundwater residue sampling design / edited by R.G. Nash and A.R. Leslie. Includes references.

Language: English

Descriptors: Groundwater; Agricultural chemicals; Water pollution; Sampling; Wells

Abstract: The installation and sampling of monitoring wells are important components of most studies of agricultural chemicals in groundwater. For many agricultural chemicals, requirements for well materials and sampling techniques can be simplified compared to those often used in other types of groundwater monitoring programs. These simplified techniques allow for quicker reaction to events occurring in a study and installation of wells in areas inaccessible to drilling equipment, while reducing unnecessary expenses.

AUTHOR INDEX

SUBJECT INDEX

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SEARCH STRATEGY

Set	Items	Description
S1	791	(NONPOINT OR NON()POINT) () (SOURCE? OR POLLUT?) OR ((RUNOFF AND POLLUT?) AND (AGRICULTUR? OR FARM?)
S2	3554	((RUNOFF OR MANURE? OR WASTE?) (2N) (DAIRY OR SWINE OR POULTRY OR ANIMAL OR PLANT OR BARN OR BARNYARD OR FEEDLOT OR MILKHOUSE OR MILK()HOUSE OR SLURR? OR LAGOON OR ORGANIC))/TI,DE,ID
S3	31017	(AGRICULTUR? () CHEMICAL? OR AGRICHEMICAL? OR FERTILI?ER OR (NITROGEN OR COMPOUND OR

		PHOSPHORUS OR POTASSIUM OR LIQUID OR CALCIUM()FERTILI?ER?)/TI,DE,ID
S4	38302	(NITRATE? OR NITRITE? OR NITROGEN)/TI,DE,ID
S5	66866	(PESTICID? OR HERBICID? OR ALGICID OR FUNGICID? OR INSECTICID? OR RODENTICID? OR FUMIGANT? OR BACTERICID? OR AVICID? OR ACARICID? OR MOLLUSCICID? OR NEMATICID?)/TI,DE,ID OR SH=H000
S6	2468	(WATER(3N) (DRINKING OR TAP OR WELL OR URBAN OR RURAL))/TI,DE,ID
S7	70330	(MONITOR? OR ASSESSMENT OR SAMPL? OR TEST OR TESTS OR TESTING OR MEASURE?)/TI,DE,ID
S8	17510	GROUND()WATER? OR GROUNDWATER OR UNDERGROUND()WATER? OR AQUIFER? OR ARTESIAN? OR CISTER? OR WELL? ? OR SPRING? ?)/TI,DE,ID
S9	50527	(WATER(2N) (QUALIT? OR POLLUT? OR CONTAMIN?) OR RUNOFF OR SURFACE()WATER? OR RIVER? OR STREAM? OR LAKE? ? OR POND? ?)/TI,DE OR SH=P200
S10	529	((S1 OR S2 OR S3 OR S4 OR S5) AND (S6 OR S8 OR S9)) AND S7
S11	490	S10/ENG
s12	136	S11 AND PY=(1991 OR 1992 OR 1993)

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DeJong, R. Comparison of two soil-water models under
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