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Researching Water Quality (I)

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Water Quality Information Center

RESEARCHING WATER QUALITY

1 NAL Call. No.: TD420.A1E5
Acidic deposition to streams: a geology-based method predicts their sensitivity.
Bricker, O.P.; Rice, K.C.
Washington, D.C. : American Chemical Society; 1989 Apr.
Environmental science & technology v. 23 (4): p. 379-385.
ill., maps; 1989 Apr. Includes references.

Language: English

Descriptors: Maryland; Streams; Acid rain; Acids; Deposition; Watersheds; Water pollution; Sampling; Prediction; Geology; Methodology

2 NAL Call. No.: 292.9 AM34
An algorithm for estimating surface suspended sediment concentrations with Landsat MSS digital data.
Ritchie, J.C.; Cooper, C.M.
Bethesda, Md. : American Water Resources Association; 1991
May. Water resources bulletin v. 27 (3): p. 373-379; 1991 May.
Includes references.

Language: English

Descriptors: Mississippi; Sediment; Surface layers; Erosion; Water reservoirs; Water quality; Reflectance; Optical properties; Landsat; Remote sensing; Spectral data; Algorithms; Regression analysis; Monitoring

Abstract: Algorithms for Landsat MSS digital data are needed to reduce the necessity of calibrating each Landsat scene if these data are to be useful in monitoring programs for surface suspended sediments. In this study digital data were extracted from 16 Landsat Multispectral Scanner (MSS) scenes collected between March 1987 and August 1988 over Enid Reservoir in North Central Mississippi. These data were converted to radiance and reflectance data for comparison with field measurements of surface suspended sediment concentrations. Concentrations ranged from 2 to 168 mg/1 during the study with only four greater than 100 mg/1. Linear and polynomial regression analyses were used to relate the surface suspended sediment concentrations with radiance and reflectance. Reflectance in MSS band 2 (0.6 to 0.7 Km) and MSS band 3 (0.7 to 0.8 ;micrometer) were best related to the surface suspended sediment concentrations with coefficients of determination accounting for 71 percent and 68 percent of the variation in the data, respectively. Regressions with radiance data accounted for 36 percent (band 2) or less of the variation. Logarithmic transformations of either reflectance or sediment concentrations increase the coefficients of determination for MSS band 2 reflectance data to 81 percent. Regressions between the ratio of MSS band 1 to MSS band 2 reflectances and concentrations also accounted for 80 percent of the variation. An equation Log(e) SS(mg/l) = -9.21R1/2 + 2.71R,1/2(2) + 8.45, where S is surface suspended sediment concentrations and R1/2 is the ratio of MSS band 1 to MSS band 2 reflectances, provided the best fit to the data with a coefficient of determination of 0.82. This equation is essentially the same as an algorithm proposed by Topliss et al. (1990), for estimating surface suspended sediment concentrations in Canadian coastal waters. These equations for Enid Reservoir and Canadian waters suggest that it may be possible to develop an algorithm for widespread use for est

3 NAL Call. No.: QR1.L47
An alternative approach to the yeast extract-nalidixic acid method for determining the proportion of metabolically active aquatic bacteria. Al-Hadithi, S.A.; Goulder, R.
Oxford : Blackwell Scientific Publications; 1989 Mar.
Letters in applied microbiology v. 8 (3): p. 87-90; 1989 Mar.
Includes references.

Language: English

Descriptors: England; Water composition and quality; Aquatic organisms; Isolation technique; Laboratory methods

4 NAL Call. No.: TD420.A1E5
Analysis of substituted benzene compounds in groundwater using solid-phase microextraction.
Arthur, C.L.; Killam, L.M.; Motlagh, S.; Lim, M.; Potter, D.W.; Pawliszyn, J. Washington, D.C. : American Chemical Society; 1992 May.

Environmental science & technology v. 26 (5): p. 979-983; 1992 May. Includes references.

Language: English

Descriptors: Groundwater pollution; Pollutants; Benzene; Toluene; Xylene; Analytical methods; Extraction

5 NAL Call. No.: GB701.W375 no.90-4005
Analysis of water-quality data and sampling programs at selected sites in north-central Colorado.. Analysis of water quality data and sampling programs at selected sites in north-central Colorado
Mueller, David K.
Geological Survey (U.S.),Northern Colorado Water Conservancy District, United States, Bureau of Reclamation
Denver, Colo. : U.S. Geological Survey : Open-File Reports Section [distributor],; 1990.
v, 79 p. : ill., maps ; 28 cm. (Water-resources investigations report ; 90-4005). Includes bibliographical references (p. 57).

Language: English

Descriptors: Water quality; Water, Underground

6 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

7 NAL Call. No.: TD420.A1E5
Analytical chemistry for environmental sciences.
D'Elia, C.F.; Sanders, J.G.; Capone, D.G.
Washington, D.C. : American Chemical Society; 1989 Jul.
Environmental science & technology v. 23 (7): p. 768-774. ill; 1989 Jul. Includes references.

Language: English

Descriptors: Maryland; Saline water; Water composition and quality; Analytical methods; Environmental protection; Monitoring; Water law; Water pollution

8 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.

9 NAL Call. No.: 290.9 AM32P
An automated soil water monitoring and leachate sampling system. Bjorneberg, D.L.; Bischoff, J.H.
St. Joseph, Mich. : The Society; 1989.
Paper - American Society of Agricultural Engineers (89-2533): p. 167-195; 1989. Paper presented at the 1989 International Winter Meeting of the American Society of Agricultural Engineers, December 12-15, 1989, New Orleans, Louisiana. Includes references.

Language: English

Descriptors: Soil water content; Monitoring; Water quality

10 NAL Call. No.: 56.8 SO3
Batch versu column method for determining distribution of organics between soil and water phases.
Johnson, J.A.; Farmer, W.J.
Baltimore, Md. : Williams & Wilkins; 1993 Feb.
Soil science v. 155 (2): p. 92-99; 1993 Feb. Includes references.

Language: English

Descriptors: Alfisols; Sandy loam soils; Soil analysis;

Analytical methods; Comparisons; Napropamide; Lindane; Sorption; Distribution; Soil solution; Sorption isotherms; Leaching; Movement in soil

11 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

12 NAL Call. No.: TD426.J68
Characterization of a sandy aquifer material at the grain scale. Ball, W.P.; Buehler, C.; Harmon, T.C.; Mackay, D.M.; Roberts, P.V. Amsterdam : Elsevier; 1990 Mar.
Journal of contaminant hydrology v. 5 (3): p. 253-295; 1990 Mar. Literature review. Includes references.

Language: English

Descriptors: Aquifers; Sandy soils; Physico-chemical properties of soil; Solutions; Sorption; Movement in soil; Soil pollution; Groundwater pollution; Analytical methods

13 NAL Call. No.: S583.A7
Characterization of the O-(2,3,4,5,6-pentafluorobenzyl)-hydroxylamine hydrochloride (PFBOA) derivatives of some aliphatic mono- and dialdehydes and quantitative water analysis of these aldehydes.
Cancilla, D.A.; Chou, C.C.; Barthel, R.; Hee, S.S.Q.
Arlington, VA : AOAC International; 1992 Sep.
Journal of AOAC International v. 75 (5): p. 842-854; 1992 Sep.
Includes references.

Language: English

Descriptors: Water quality; Pesticide residues; Quantitative analysis; Oximes; Validity; Reference standards; Spectral data; Water pollution

14 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

15 NAL Call. No.: 56.9 SO3
Comparison of statistical and standard techniques to classify and delineate sodic soils.
Seelig, B.D.; Richardson, J.L.; Knighton, R.E.
Madison, Wis. : The Society; 1991 Jul.
Soil Science Society of America journal v. 55 (4): p. 1042-1048; 1991 Jul. Includes references.

Language: English

Descriptors: North Dakota; Sodic soils; Soil classification; Spatial variation; Soil surveys; Statistical analysis; Discriminant analysis; Component analysis; Spatial distribution; Soil boundaries; Upland soils; Wetland soils; Soil morphology; Soil variability; Soil salinity; Leaching; Physicochemical properties

Abstract: Statistical estimates of soil variability within and among delineations of taxonomic units are useful in designing and checking classification systems. We compared soil classification and spatial differentiation of a landscape dominated by sodic soils. Both statistical methodologies and standard soil-survey techniques were used to differentiate soils. Forty-nine pedons at three landform positions were compared with canonical discriminant analysis, principal component analysis, and kriging. Statistical analyses improved soil classification and allowed a clearer view of the field distribution of soil properties, compared with standard soil-survey techniques. Soils with properties indicative of strong leaching (Solods) are recognized as significantly different from other soil taxonomic components at the intermediate and wetland positions. Solods were extensive at the wetland position, but could not be differentiated from Typic Natraquolls solely by morphologic observation. Although Solods are related to other leached soils, Argiaquolls and Argialbolls, they also possess soil properties that are similar to associated sodic soils. Leptic Natriborolls and Udic Natriborolls were similar except for salinity. The salinity difference by itself does not produce significant statistical differentiation between the soils of the two natric subgroups. High salinity would be better recognized as a soil-series phase, not a separate subgroup of Natriborolls.

16 NAL Call. No.: TD419.R47
A comparison of surface-grab and cross sectionally integrated stream-water-quality sampling methods.
Martin, G.R.; Smoot, J.L.; White, K.D.
Alexandria, Va. : The Federation; 1992 Nov.

Water environment reserarch v. 64 (7): p. 866-876; 1992 Nov.
Includes references.

Language: English

Descriptors: Kentucky; River water; Water quality; Sampling; Site types; Farmland; Forests

17 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.

18 NAL Call. No.: TD423.C642 1992
Compilation of E.P.A.'s sampling and analysis methods..
E.P.A.'s sampling and analysis methods
Keith, Lawrence H.,_1938-; Mueller, William,_1929-; Smith, David, Chelsea, MI. : Lewis Publishers,; 1992.
803 p. ; 24 cm.

Language: English

Descriptors: Water; Pollutants

19 NAL Call. No.: GB701.W375 no.89-4172
A computerized data-base system for land-use and land-cover data collected at ground-water sampling sites in the pilot National Water-Quality Assessment Program.. Computerized data base system for land-use and land-cover data collected at ground-water sampling sites in the pilot National Water-Quality Assessment Program
Scott, J. C.
Geological Survey (U.S.)
Oklahoma City, Okla. : Dept. of the Interior, U.S. Geological Survey ; Denver, Colo. : Books and Open-File Reports, U.S. Geological Survey [distributor],; 1989.
vi, 139 p. : ill. ; 28 cm. (Water-resources investigations report ; 89-4172). Includes bibliographical references (p.

71).

Language: English

Descriptors: Land use; Data bases; Land use; Data processing; Water, Underground; Sampling

20 NAL Call. No.: GB701.W375 no.90-4101
Computerized stratified random site-selection approaches for design of a ground-water-quality sampling network..
Computerized stratified random site selection approaches for design of a ground water quality sampling network Scott, J. C. Geological Survey (U.S.)
Oklahoma City, Okla. : Dept. of the Interior, U.S. Geological Survey ; Denver, Colo. : Books and Open-File Reports [distributor],; 1990; I 19.42/4:90-4101. vi, 109 p. : ill., maps ; 28 cm. (Water-resources investigations report ; 90-4101). "National Water-Quality Assessment Program"--Cover. Includes bibliographical references (p. 64-65).

Language: English; English

Descriptors: Water, Underground; Water quality; Stratified sets

21 NAL Call. No.: QH540.I52
Conducting field studies for testing pesticide leaching models. Smith, C.N.; Parrish, R.S.; Brown, D.S.
London : Gordon and Breach Science Publishers; 1990. International journal of environmental analytical chemistry v. 39 (1): p. 3-21. ill; 1990. Paper presented at the " Workshop on Soil Residue Analysis," Aug 8-10, 1988, Winnipeg, Manitoba. Includes references.

Language: English

Descriptors: Pesticides; Leaching; Groundwater; Models; Field tests

22 NAL Call. No.: 99.8 F7632
Confidence intervals from single observations in forest research. Valentine, H.T.; Furnival, G.M.; Gregoire, T.G.
Bethesda, Md. : Society of American Foresters; 1991 Mar. Forest science v. 37 (1): p. 370-373; 1991 Mar. Includes references.

Language: English

Descriptors: Forests; Forest inventories; Forest trees; Volume; Forest statistics; Logging effects; Clearcutting; Clear strip felling; Water quality; Water yield; Statistical analysis; Statistical data; Experimental design

Abstract: A procedure for constructing confidence intervals

and testing hypotheses from a single trial or observation is reviewed. The procedure requires a prior, fixed estimate or guess of the outcome of an experiment or sampling. Two examples of applications are described: a confidence interval is constructed for the expected outcome of a systematic sampling of a forested tract, and a hypothesis is tested in connection with a watershed experiment. Potential misuses of the procedure also are discussed.

23 NAL Call. No.: 56.8 SO3
Contamination of collected soil water samples by the dissolution of the mineral constituents of porous P.T.F.E. cups.
Maitre, V.; Bourrie, G.; Curmi, P.
Baltimore, Md. : Williams & Wilkins; 1991 Oct.
Soil science v. 152 (4): p. 289-293; 1991 Oct. Includes references.

Language: English

Descriptors: Soil analysis; Acid soils; Soil water; Sampling; Contamination; Samplers; Ethylene; Fluorine; Polymers; Dissolving; Acid treatment; Silicon; Silica; Calcium; Potassium; Magnesium; Sodium; Iron; Aluminum; Manganese; Chromium; Titanium; Chemical composition; Soil solution; Leaching; Geochemistry; Soil micromorphology

24 NAL Call. No.: 292.8 J82
Contamination of soil and groundwater by automatic transmission fluid: site description and problem assessment.
Abdul, A.S.; Gibson, T.L.; Kia, S.F.
Amsterdam : Elsevier Scientific Publishers, B.V.; 1990 Dec15.
Journal of hydrology v. 121 (1/4): p. 133-153; 1990 Dec15. Includes references.

Language: English

Descriptors: Michigan; Soil pollution; Groundwater pollution; Pollutants; Wells; Aquifers; Measurement; Core sampling; Soil analysis; Monitoring

Abstract: Soil and groundwater beneath a region of a manufacturing plant are contaminated with automatic transmission fluid (ATF). The extent of contamination was assessed by maximizing the use of real-time data from soil-core sampling and monitoring wells. The number, location, and depth of cores and of monitoring wells were determined during the investigation based on: (1) inspection and analysis of soil-core samples immediately after each core was taken: (2) physical and chemical measurements of core samples at the end of each day; (3) measurements in monitoring wells at several stages during the investigation. This approach differs significantly from the conventional approach of randomly placing wells through the hydrogeologic system. Soil cores were taken and monitoring wells installed at 53 locations. The

perched aquifer extends to about 13 ft. and is comprised mainly of sandy materials, which have spatial heterogeneity in size distribution and hydraulic properties. About 208000 +/- 33000 gal. of ATF has spread over an area of about 64000 ft. The region of ATF contamination is comprised of three distinct and contiguous layers. The center layer is about 2.6 ft. deep at its thickest point and extends to about 250 ft. at its widest point. The soil in this zone is about 85% saturated with 133000 +/- 21000 gal. of ATF, which has depressed the water table into the aquifer. The top layer is about 14 in. thick and contains about 50640 gal. of ATF held by capillary forces. The amount of ATF in this zone decreases with height above the center layer from about 85% saturation to residual saturation (20%). The amount of ATF in the deepest layer is near the residual saturation. This layer is 1.0 +/- 0.5 ft. thick and has 24500 +/- 12250 gal. ATF. This investigative approach did not spread the ATF to clean regions of the aquifer as could occur with conventional approaches, and it provided the data needed to assess the problem and to design a cleanup plan. A new approach is being use

25 NAL Call. No.: RA1221.T69
Cr and Hg toxicity assessed in situ using the structural and functional characteristics of algal communities.
Singh, A.K.; Rai, L.C.
New York, N.Y. : John Wiley & Sons; 1991 Feb.
Environmental toxicology and water quality v. 6 (1): p. 97-107; 1991 Feb. Includes references.

Language: English

Descriptors: India; Phytoplankton; Algae; Cyanobacteria; Phytotoxicity; Mercury; Chromium; Heavy metals; Nitrogenase; Enzyme activity; Nitrogen fixation; Nutrient uptake; Carbon; Inhibition; Metal tolerance; Carotenoids; Chlorophyll; Susceptibility; Field tests; Aquatic environment; Water pollution

Abstract: The toxicity of mercury and chromium on algal community structure have been assessed using in situ N2ase activity, pigment diversity, autotrophic index, and 14C uptake of algae. The location was in the river Ganga and controlled ecosystem pollution experiment enclosures were used. Maximum inhibition of algal number was observed at 0.8 micrograms Hg mL-1 followed by 8.0 micrograms Cr mL-1. Unicellular forms, except for Anorthoneis excentrica, were very sensitive to test metals used. The decline in algal number was concentration dependent and metal specific at generic and species levels. Complete elimination of three and six species was observed respectively at 8.0 micrograms Cr mL-1 and 0.8 micrograms Hg mL-1 after 12 days' exposure. Likewise, a concentration-dependent and metal-specific increase in autotrophic index and pigment diversity of phytoplankton was recorded for Hg and Cr. Inhibition of 14C uptake of phytoplankton in Ganga water was almost equal (79%) at 0.8 micrograms Hg mL-1 and 8.0 micrograms Cr mL-1 (78%). Although complete inhibition of in

situ N(2)ase was observed at 0.8 micrograms Hg mL-1, it was only 80% with 8.0 micrograms Cr mL-1. Our study suggests that heavy metals inhibit both structural and functional variables of phytoplankton in field microcosms. Hence this technique seems to hold potential for the biomonitoring of heavy metal toxicity in the field.

26 NAL Call. No.: HC79.E5E5
Detecting acid precipitation impacts on lake water quality.
Loftis, J.C.; Taylor, C.H.
New York, N.Y. : Springer-Verlag; 1989 Sep.
Environmental management v. 13 (5): p. 529-538; 1989 Sep.
Includes references.

Language: English

Descriptors: U.S.A.; Acid rain; Water composition and quality; Monitoring; Trends; Lakes; Statistical methods; Mathematical models; Monte carlo method

27 NAL Call. No.: S583.A7
Determination of eight organochlorine pesticides at low nanogram/liter concentrations in groundwater using filter disk extraction and gas chromatography.
Tomkins, B.A.; Merriweather, R.; Jenkins, R.A.; Bayne, C.K.
Arlington, VA : AOAC International; 1992 Nov.
Journal of AOAC International v. 75 (6): p. 1091-1099; 1992 Nov. Includes references.

Language: English

Descriptors: Groundwater pollution; Organochlorine pesticides; Pesticide residues; Determination; Quantitative analysis; Analytical methods

28 NAL Call. No.: S583.A7
Determination of organic pollutants in reagent water by liquid-solid extraction followed by supercritical fluid elution.
Tang, P.H.; Ho, J.S.; Eichelberger, J.W.
Arlington, VA : AOAC International; 1993 Jan.
Journal of AOAC International v. 76 (1): p. 72-82; 1993 Jan.
Includes references.

Language: English

Descriptors: Pollution; Pollutants; Organic compounds; Determination; Extraction; Analytical methods

29 NAL Call. No.: 475 J824
Determination of phenoxy acid herbicides in water. Polymeric pre-column preconcentration and tetrabutyl-ammonium ion-pair separation on a PRP-1 column.

Geerdink, R.B.; Balkom, C.A.A. van; Brouwer, H.J.
Amsterdam : Elsevier Science Publishers; 1989 Nov03.
Journal of chromatography v. 481: p. 275-285. ill; 1989 Nov03.
Includes references.

Language: English

Descriptors: Herbicides; Water pollution; Gas chromatography; Analytical methods

30 NAL Call. No.: TD172.A7
Determination of textile dyes in organs of Oncorhynchus mykiss W. after in vitro exposure.
Riva, M.C.; Flos, R.; Crespi, M.; Pepio, M.
New York, N.Y. : Springer-Verlag; 1992 Aug.
Archives of environmental contamination and toxicology v. 23 (2): p. 206-210; 1992 Aug. Includes references.

Language: English

Descriptors: Water pollution; Textiles; Dyes; Oncorhynchus; In vitro; Exposure; Body parts; Analysis; Detection; Analytical methods

31 NAL Call. No.: 302.8 T162
Development and validation of analytical methods for the determination of phenolic compounds in pulp and wastewater treatment plant sludges. Louch, J.R.; LaFleur, L.E.; Wilson, G.; Bautz, D.; Woodrow, D.; Teitzel, H.; Jones, J.; Mark, M.
Norcross, Ga. : The Technical Association of the Pulp and Paper Industry; 1993 Mar.
Tappi journal v. 76 (3): p. 71-80; 1993 Mar. Includes references.

Language: English

Descriptors: Pulp mill effluent; Paper mill sludge; Waste water treatment; Phenolic compounds; Chemical analysis; Aromatic compounds; Organochlorine compounds; Water pollution

32 NAL Call. No.: 56.8 J823
The development, calibration and field testing of a soil loss and a runoff model derived from a small-scale physical simulation of the erosion environment on arable land in Zimbabwe.
Elwell, H.A.
Oxford : Blackwell Scientific Publications; 1990 Jun.
The Journal of soil science v. 41 (2): p. 239-253; 1990 Jun.
Includes references.

Language: English

Descriptors: Zimbabwe; Interrill erosion; Arable land; Runoff; Losses from soil systems; Simulation; Prediction; Mathematical

models

33 NAL Call. No.: TD419.R47
Difficulties related to using extreme percentiles for water quality regulations.
Berthouex, P.M.; Hau, I.
Alexandria, Va. : The Federation; 1991 Sep.
Research journal of the Water Pollution Control Federation v. 63 (6): p. 873-879; 1991 Sep. Includes references.

Language: English

Descriptors: Water quality; Regulation; Statistical analysis; Accuracy; Decision making; Mathematics; Statistical methods

34 NAL Call. No.: S592.7.A1S6
Dispersion effect on the apparent nitrogen isotope fractionation factor associated with denitrification in soil; evaluation by a mathematical model. Kawanishi, T.; Hayashi, Y.; Kihou, N.; Yoneyama, T.; Ozaki, Y. Exeter : Pergamon Press; 1993 Mar.
Soil biology and biochemistry v. 25 (3): p. 349-354; 1993 Mar. Includes references.

Language: English

Descriptors: Denitrification; Quantitative analysis; Agricultural soils; Solutes; Dispersion; Transport processes; Soil water; Water flow; Mathematical models; Nitrate; Groundwater pollution

Abstract: An analytical model is constructed to investigate the effect of dispersion on the apparent 15N/14N fractionation factor associated with denitrification in soil. The steady input of solute with a fixed isotope ratio, uniform flow of the solute, and the first-order reaction for each isotope are assumed, and the relationship between the concentration distribution and the change of isotope ratio in the steady state is examined. The only dimensionless parameter, kl4ND/v2, the product of the first-order reaction rate constant and the dispersion coefficient divided by the square of the superficial velocity, determines the effect of dispersion, and if its value is larger than 0.01, the dispersion will affect the apparent isotope fractionation factor. As kl4ND/v2 increases, the effect becomes more prominent, and when it approaches infinity, the ratio of the apparent per mille enrichment factor to the true one, (alpha ap-1)/(alpha tr-1), reaches 0.5.

35 NAL Call. No.: 290.9 AM3PS (EE)
Do model uncertainty with correlated inputs.
Song, Q.; Brown, L.C.
New York, N.Y. : American Society of Civil Engineers, Environmental Engineering Division; 1990 Nov.

Journal of environmental engineering v. 116 (6): p. 1164-1180; 1990 Nov. Includes references.

Language: English

Descriptors: Water quality; Models; Dissolved oxygen; Uncertainty; Statistical analysis; Monte carlo method

36 NAL Call. No.: RA1270.P35A1
Ecological control on the basis of biological object response.
Genjatulin, K.V.
New York, N.Y. : Springer-Verlag; 1991 Mar.
Bulletin of environmental contamination and toxicology v. 46 (3): p. 387-391; 1991 Mar. Includes references.

Language: English

Descriptors: Water pollution; Pollutants; Escherichia coli; Bacteriophages; Viruses; Microbial activities; Toxicity; Resistance; Mathematical models; Quantitative analysis

37 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.

38 NAL Call. No.: 290.9 AM32T
Effect of rainfall measurement time and depth resolution on EI calculation. Williams, R.G.; Sheridan, J.M.
St. Joseph, Mich. : American Society of Agricultural Engineers; 1991 Mar. Transactions of the ASAE v. 34 (2): p. 402-406; 1991 Mar. Includes references.

Language: English

Descriptors: Georgia; Water erosion; Losses from soil systems; Rain; Runoff; Statistical analysis; Universal soil loss equation

Abstract: The Rainfall Erosion Index (EI) is one of the primary factors in the Universal Soil Loss Equation. Calculation of EI is based on breakpoint rainfall records where breakpoints separate periods of constant rainfall intensity. Breakpoint data are determined from continuously recording, chart-type raingage records. This article examines the use of rainfall records for EI determination where accumulated depth is recorded at fixed time increments. Various time (1, 2, 3, 5, 6, 10, 15, 30, and 60 min) and depth (0.25, 0.5, 0.75, 1.0, 2.0, 3.0, 4.0, and 5.0 mm) resolutions were superimposed on breakpoint rainfall records from Tifton, GA to obtain equivalent non-breakpoint records. Results of statistical analyses relating non-breakpoing EI values to breakpoint EI values are presented, along with correction factors for adjusting non-breakpoint EI to breakpoint EI and a relationship defining optimum time and depth resolution combinations for accurate EI calculation.

39 NAL Call. No.: 292.9 AM34
Effect of serial correction on ground water quality sampling frequency. Close, M.E.
Minneapolis, Minn. : American Water Resources Association; 1989 Jun. Water resources bulletin v. 25 (3): p. 507-515. maps; 1989 Jun. Includes references.

Language: English

Descriptors: New Zealand; Groundwater; Water composition and quality; Nitrates; Sampling techniques; Evaluation

40 NAL Call. No.: TD420.A1E5
Effect of suspended sediment concentration on the sediment to water partition coefficient for 1,3,6,8-tetrachlorodibenzo-p-dioxin.
Servos, M.R.; Muir, D.C.G.
Washington, D.C. : American Chemical Society; 1989 Oct. Environmental science & technology v. 23 (10): p. 1302-1306; 1989 Oct. Includes references.

Language: English

Descriptors: Water pollution; Suspensions; Sediments;

Concentration; Organic compounds; Pollutants; Analytical methods; Calculation

41 NAL Call. No.: TD428.A37T695 1989
Effect of water table height and soil physical properties on nutrient leaching.
Elder, L.; Chieng, S.T.
Denver, Colo. : U.S. Committee on Irrigation and Drainage; 1989. Toxic substances in agricultural water supply and drainage : an int environ perspective : papers from the Second Pan-American Regional Conf of the Int Commission on Irrigation and Drainage, Ottawa, Canada, June 8-9, 1989. p. 293-304. ill; 1989. Includes references.

Language: English

Descriptors: British Columbia; Water table; Height; Physical properties of soil; Nitrates; Leaching; Silty soils; Clay soils; Loam soils; Laboratory methods

42 NAL Call. No.: TD403.G7
Effects of small-scale vertical variations in well-screen inflow rates and concentrations of organic compounds on the collection of representative ground-water-quality samples.
Gibs, J.; Brown, G.A.; Turner, K.S.; MacLeod, C.L.; Jelinski, J.C.; Koehnlein, S.A.
Dublin, Ohio : Ground Water Pub. Co; 1993 Mar.
Ground water v. 31 (2): p. 201-208; 1993 Mar. Includes references.

Language: English

Descriptors: New Jersey; Groundwater pollution; Wells; Water; Sampling; Pollutants; Organic compounds; Concentration

Abstract: Because a water sample collected from a well is an integration of water from different depths along the well screen, measured concentrations can be biased if analyte concentrations are not uniform along the length of the well screen. The resulting concentration in the sample, therefore, is a function of variations in well-screen inflow rate and analyte concentration with depth. A multiport sampler with seven short screened intervals was designed and used to investigate small-scale vertical variations in water chemistry and aquifer hydraulic conductivity in ground water contaminated by leaded gasoline at Galloway Township, Atlantic County, New Jersey. The multiport samplers were used to collect independent samples from seven intervals within the screened zone that were flow-rate weighted and integrated to simulate a 5-foot-long, 2.375-inch-outside-diameter conventional wire-wound screen. The integrations of the results of analyses of samples collected from two multiport samplers showed that a conventional 5-foot-long well screen would integrate contaminant concentrations over its length and resulted in an apparent contaminant concentration that was as

little as 28 percent of the maximum concentration observed in the multiport sampler.

43 NAL Call. No.: RA1270.P35A1
ELISA of simazine in soil: applications for a field leaching study. Goh, K.S.; Richman, S.J.; Troiano, J.; Garretson, C.L.; Hernandez, J.; Hsu, J.; White, J.; Barry, T.A.; Ray, M.; Tran, D.
New York, N.Y. : Springer-Verlag; 1992 Apr.
Bulletin of environmental contamination and toxicology v. 48 (4): p. 554-560; 1992 Apr. Includes references.

Language: English

Descriptors: Simazine; Herbicide residues; Leaching; Soil water; Irrigation; Soil depth; Quantitative analysis; Elisa; Gas chromatography

44 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

45 NAL Call. No.: TD420.A1E5
EPA's analytical methods for water: the next generation.
Hites, R.A.; Budde, W.L.
Washington, D.C. : American Chemical Society; 1991 Jun.
Environmental science & technology v. 25 (6): p. 998-1006; 1991 Jun. Includes references.

Language: English

Descriptors: U.S.A.; Water pollution; Pollutants; Organic compounds; Analytical methods; Environmental protection; Public agencies

46 NAL Call. No.: 290.9 AM32P
Error control in pollutant mass load estimation.
Magette, W.L.; Ifft, T.H.
St. Joseph, Mich. : The Society; 1989.
Paper - American Society of Agricultural Engineers (89-2517): 12 p.; 1989. Paper presented at the 1989 International Winter

Meeting of the American Society of Agricultural Engineers, December 12-15, 1989, New Orleans, Louisiana. Includes references.

Language: English

Descriptors: Runoff; Pollutants; Regression analysis; Errors; Control

47 NAL Call. No.: 56.8 SO3
Estimation of zero-tension pan lysimeter collection efficiency. Jemison, J.M. Jr; Fox, R.H. Jr
Baltimore, Md. : Williams & Wilkins; 1992 Aug.
Soil science v. 154 (2): p. 85-94; 1992 Aug. Includes references.

Language: English

Descriptors: Pennsylvania; Hapludalfs; Solutes; Leaching; Measurement; Lysimeters; Efficiency; Soil water; Sampling; Assessment; Analytical methods; Evaluation; Comparisons; Soil water movement; Zea mays

48 NAL Call. No.: S561.6.I8I35
Evaluating the effectiveness of field demonstration programs. Contant, C.K.; Young, C.L.
Ames, Iowa : The Extension; 1990 May.
IFM - Iowa State University Extension (6): 17 p.; 1990 May. Includes references.

Language: English

Descriptors: Iowa; Demonstration farms; Field tests; Information; Effects; Integrated pest management; Groundwater pollution; Water quality; Farmers' attitudes; Extension education

49 NAL Call. No.: QH545.A1E58
Evaluation of EPA's rapid bioassessment benthic metrics: metric redundancy and variability among reference stream sites.
Barbour, M.T.; Plafkin, J.L.; Bradley, B.P.; Graves, C.G.; Wisseman, R.W. Elmsford, N.Y. : Pergamon Press; 1992.
Environmental toxicology and chemistry v. 11 (4): p. 432-449; 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: Oregon; Colorado; Kentucky; Aquatic insects; Aquatic communities; Aquatic environment; Water pollution; Pollutants; Toxicity; Community ecology; Species diversity;

Benthos; Streams; Statistical analysis; River valleys; Mountain areas; Plains; Public agencies; Rapid methods

50 NAL Call. No.: 56.8 J823
Evaluation of porous ceramic cups for monitoring soil-water aluminium in acid soils: comment on a paper by Raulund-Rasmussen (1989).
Hughes, S.; Reynolds, B.
Oxford : Blackwell Scientific Publications; 1990 Jun.
The Journal of soil science v. 41 (2): p. 325-328; 1990 Jun.
Includes references.

Language: English

Descriptors: Acid soils; Soil solution; Aluminum; Leaching; Gibbsite; Solubility; Samplers; Sequential sampling; Monitoring

51 NAL Call. No.: GB746.W33
Evaluation of quality and detection of sources of pollution of subsurface waters by the gas geochemical method.
Korobeinik, G.S.; Kostromin, A.N.; Sedova, V.K.; Trufmanova, E.P. New York, N.Y. : Consultants Bureau; 1989 Mar.
Water resources v. 15 (3): p. 234-238; 1989 Mar. Translated from: Vodnye Resursy,. Includes references.

Language: English; Russian

Descriptors: U.S.S.R.in europe; Groundwater pollution; Industrial wastes; Pollutants; Water composition and quality; Gases; Geochemistry; Analytical methods; Aquifers; Hydrocarbons; Mathematics; Statistical methods

52 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.

53 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.

54 NAL Call. No.: TD201.A72
Experiences of quality control of raw water storage reservoirs. Clasen, J.; Bernhardt, H.
Oxford : Blackwell Scientific Publications; 1989 Aug.
Aqua v. 38 (4): p. 256-264. ill., maps; 1989 Aug. Includes references.

Language: English

Descriptors: Water storage; Water composition and quality; Reservoirs; Quality controls; Physico-chemical properties; Algae; Biology; Sampling techniques

55 NAL Call. No.: GB701.W375 no.88-4178
An experiment in representative ground-water sampling for water-quality analysis.
Huntzinger, Thomas L.; Stullken, Lloyd E.
Toxic Waste-Ground-Water Contamination Program (U.S.)
Lawrence, Kan. : The Survey ; Denver, Colo. : Books and Open-File Reports [distributor], 1988 [i.e.; 1989; I 19.42/4:88-4178.
iv, 12 p. : ill., 1 map ; 28 cm. (Water-resources investigations report ; 4178.). Bibliography: p. 12.

Language: English; English

Descriptors: Water, Underground; Kansas; Sampling

56 NAL Call. No.: QH545.A1E58
Experimental designs for aquatic mesocosm studies: a comparison of the "ANOVA" and "regression" design for assessing the impact of tetrachlorophenol on zooplankton populations in limnocorrals.
Liber, K.; Kaushik, N.K.; Solomon, K.R.; Carey, J.H.
Elmsford, N.Y. : Pergamon Press; 1992.
Environmental toxicology and chemistry v. 11 (1): p. 61-77; 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: Organochlorine compounds; Biocides; Phenols; Water pollution; Toxicity; Zooplankton; Lakes; Experimental design; Analysis of variance; Regression analysis; Aquatic environment

57 NAL Call. No.: TD201.A4
A fast and accurate method for solving subsurface contaminant transport problems with a single uncertain parameter.
Ahlfeld, D.P.; Pinder, G.F.
Essex : Elsevier Science Publishers Ltd; 1992.
Advances in water resources v. 15 (2): p. 143-150; 1992.

Includes references.

Language: English

Descriptors: Groundwater pollution; Contaminants; Transport; Equations; Random sampling; Stochastic models; Groundwater flow; Hydraulic conductivity

58 NAL Call. No.: 56.9 SO3
Fiberglass wicks for sampling of water and solutes in the vadose zone. Boll, J.; Steenhuis, T.S.; Selker, J.S.
Madison, Wis. : The Society; 1992 May.
Soil Science Society of America journal v. 56 (3): p. 701-707; 1992 May. Includes references.

Language: English

Descriptors: Soil water; Recharge; Water quality; Monitoring; Sampling; Wicking property; Groundwater recharge; Groundwater pollution

Abstract: Sampling solute concentrations in the vadose zone provides an early-warning system for groundwater pollution. Various sampling devices are available. This study evaluates the functionality of fiberglass wicks in a soil solution sampler. Fiberglass wicks act as a hanging water column, drawing water from the undisturbed field soil without external application of suction. Flow characteristics of wicks were observed in the laboratory by miscible-displacement tests using Br and an organic dye. The matric potential in the wick as a function of flow rate was measured. Fiberglass wicks behaved like a porous medium that effectively could apply a suction to the soil while only minimally retarding the organic dye. The relationship between matric potential, moisture content, and unsaturated conductivity was determined for several wicks. Based on these relationships, a set of curves was produced depicting travel time of nonadsorbed chemicals and the matric potential in the wick as a function of flow rate. These curves can be used for selecting optimum wick length and diameter for a given sampler configuration.

59 NAL Call. No.: TD475.C66 1991
Field demonstration of biological denitrification of polluted groundwater and pilot scale field testing of biological denitrification with widely varied hydraulic loading rates.
Cook, Nevis E.; Silverstein, JoAnn; Veydovec, Bill
Colorado Water Resources Research Institute
Fort Collins, Colo. : Colorado Water Resources Research Institute,; 1991. 27, [1], 11 p. : ill. ; 28 cm. (Completion report (Colorado Water Resources Research Institute) ; no. 162.). December 15, 1991. Grant nos: 14-08-0001-G1551-01, 14-08-0001-G1551-04, project nos.: 03 and 09. ... financed in part by the U.S. Dept. of the Interior, Geological Survey ...
Includes bibliographical references (p. [28]).

Language: English

Descriptors: Denitrification; Water

60 NAL Call. No.: 44.8 J824
Field evaluation of the MUG assay for enumerating Escherichia coli in seawater and oysters from southeastern United States.
Motes, M.L. Jr; Peeler, J.T.
Ames, Iowa : International Association of Milk, Food, and Environmental Sanitarians; 1991 Apr.
Journal of food protection v. 54 (4): p. 246-248; 1991 Apr.
Includes references.

Language: English

Descriptors: Southeastern states of U.S.A.; Oysters; Food contamination; Sea water; Pollution; Fecal coliforms; Escherichia coli; Bacterial count; Bioassays; Laboratory methods; Evaluation

Abstract: Oysters and seawater collected from the southeastern United States were examined for fecal coliforms and Escherichia coli, using the current procedure of the American Public Health Association (APHA) and the fluorogenic 4-methylumbelliferyl-beta-D-glucuronide (MUG) modified APHA procedure. After the presence of E. coli in both methods was confirmed by conventional IMViC procedures, there was no significant difference between method means at the alpha = 0.05 level. In oysters, low confirmation rates of 67 and 77% were observed by the APHA and the MUG methods, respectively. Seawater had the greatest confirmation rates (95%) by the MUG method. The MUG method may be a suitable alternative to the current APHA method for the microbiological evaluation of oysters and seawater.

61 NAL Call. No.: QK745.J6
Gas chromatography determination of flurprimidol in a submersed aquatic plant (Myriophyllum spicatum), soil, and water.
Chand, T.; Lembi, C.A.
New York, N.Y. : Springer; 1991.
Journal of plant growth regulation v. 10 (2): p. 73-78; 1991.
Includes references.

Language: English

Descriptors: Myriophyllum spicatum; Aquatic weeds; Flurprimidol; Half life; Persistence; Herbicide residues; Roots; Shoots; Buds; Quantitative analysis; Soil water; Water quality; Extraction; Gas chromatography; Mass spectrometry

Abstract: Methods for the extraction and quantification of flurprimidol residues in Eurasian watermilfoil (Myriophyllum spicatum), soil, and water are described. The compound was detected and quantified by gas chromatography (GC) with a

thermionic specific detector. Its identity was confirmed by gas chromatography-mass spectrometry (GC-MS) with detection at m/e 40-320. Recoveries from samples spiked with flurprimidol at 10-10,000 ng ml-1 or g-1 averaged 86.8% for Eurasian watermilfoil shoots, 85.2% for roots, 79.3% for loam soil, and 93.3% for water. In a small-scale experiment under field conditions, approximately 88% of the applied flurprimidol dissipated in 4 weeks. The majority of recovered flurprimidol was found in the water and upper 5 cm soil layer. The half-life of the compound in water was 6.8-8 days during June/July 1989.

62 NAL Call. No.: TD403.G7
A general statistical procedure for ground-water detection monitoring at waste disposal facilities.
Gibbons, R.D.
Dublin, Ohio : Water Well Journal Publishers; 1990 Mar.
Ground water v. 28 (2): p. 235-243; 1990 Mar. Includes references.

Language: English

Descriptors: Groundwater; Water pollution; Waste disposal sites; Detection; Monitoring; Wells; Statistical methods

63 NAL Call. No.: TD428.A86G64
Geostatistical, sensitivity, and uncertainty methods for ground-water flow and radionuclide transport modeling.
Buxton, Bruce E.,
United States, Dept. of Energy, Atomic Energy of Canada Limited DOE/AECL '87 Conference on Geostatistical, Sensitivity, and Uncertainty Methods for Ground-Water Flow and Radionuclide Transport Modeling 1987 : San Francisco, Calif.
Columbus, OH : Battelle Press,; 1989.
x, 670 p. : ill. ; 24 cm. Papers presented at the DOE/AECL '87 Conference on Geostatistical, Sensitivity, and Uncertainty Methods for Ground-Water Flow and Radionuclide Transport Modeling held in San Francisco, on Sept. 15-17, 1987. Includes bibliographies and index.

Language: English

Descriptors: Nuclear power plants; Waste disposal; Environmental aspects; Mathematical models; Congresses; Radioactive pollution of water; Mathematical models; Congresses; Water, Underground; Pollution; Mathematical models; Congresses; Groundwater flow; Statistical methods; Congresses

64 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.

65 NAL Call. No.: TD196.P38L66
Global monitoring of organochlorine insecticides: an 11-year case study (1975-1985) of HCHs and DDTs in the open ocean atmosphere and hydrosphere. Tatsukawa, R.; Yamaguchi, Y.; Kawano, M.; Kannan, N.; Tanabe, S. Chelsea, Mich. : Lewis Publishers; 1990.
Long range transport of pesticides / David A. Kurtz, editor. p. 127-141; 1990. Includes references.

Language: English

Descriptors: Ddt; Hch; Air pollutants; Case studies; Chemical analysis; Marine areas; Monitoring; Sampling; Spatial distribution; Water pollution

66 NAL Call. No.: 56.8 J822
Groundwater quality assessment through cooperative private well testing: an Ohio example.
Baker, D.B.
Ankeny, Iowa : Soil and Water Conservation Society of America; 1990 Mar. Journal of soil and water conservation v. 45 (2): p. 230-235. ill., maps; 1990 Mar. Includes references.

Language: English

Descriptors: Ohio; Groundwater; Water quality; Wells; Sampling

67 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

68 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.

69 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.

70 NAL Call. No.: TD172.A7
High performance liquid chromatographic separation of fish biliary polynuclear aromatic hydrocarbon metabolites.
Deshpande, A.D.
New York, N.Y. : Springer-Verlag; 1989 Nov.
Archives of environmental contamination and toxicology v. 18 (6): p. 900-907. maps; 1989 Nov. Includes references.

Language: English

Descriptors: Water pollution; Pollutants; Aromatic hydrocarbons; Metabolites; Toxicity; Fish; Biliary system; Analytical methods; Liquid chromatography

71 NAL Call. No.: S544.3.N3C66
How to test your well water and understanding the results.
Hammond, B.; Lewis, S.R.; Johnson, W.S.; Spoon, E.
Reno, Nev. : The College; 1992.
Fact sheet - College of Agriculture, University of Nevada-Reno, Nevada Cooperative Extension (92-17): 6 p.; 1992.
Includes references.

Language: English

Descriptors: Wells; Water quality; Standards; Tests; Sampling

72 NAL Call. No.: QH540.J6
A hydride generation atomic absorption technique for arsenic speciation. Masscheleyn, P.H.; Delaune, R.D.; Patrick, W.H. Jr
Madison, Wis. : American Society of Agronomy; 1991 Jan.
Journal of environmental quality v. 20 (1): p. 96-100; 1991 Jan. Includes references.

Language: English

Descriptors: Louisiana; Arsenic; Analytical methods; Atomic absorption spectrophotometry; Contaminants; River water;

Sediment; Soil pollution; Soil testing; Water pollution

Abstract: Based on an investigation of hydride generation responses in solutions of various acidities containing nanogram quantities of arsenite [As(III)], arsenate [AS(V)], monomethylarsonic acid (MMAA) and dimethylarsinic acid (DMAA) a sensitive analytical method for the accurate determination of inorganic and organic As species in aqueous solutions was developed. After a pH-selective reduction, the arsenic species were condensed in a U-tube filled with a gas chromatographic packing immersed in liquid N2. The species were then separated by slow warming of the trap and measured with an atomic absorption spectrophotometer. The arsines from inorganic As (III) were selectively generated from a solution buffered at a pH of 6.0. The solution of then further acidified to a pH corresponding to 2 M HCl and analyzed for As(V). A second sample aliquot, buffered at pH 1.5 with oxalic acid, was used for the quantitative determination of [As(III)+As(V)], MMAA and DMAA.

73 NAL Call. No.: 56.9 SO3
Imhoff cone determination of sediment in irrigation runoff.
Sojka, R.E.; Carter, D.L.; Brown, M.J.
Madison, Wis. : The Society; 1992 May.
Soil Science Society of America journal v. 56 (3): p. 884-890; 1992 May. Includes references.

Language: English

Descriptors: Irrigated soils; Furrow irrigation; Water erosion; Soil; Losses from soil; Runoff; Sediment; Measurement; Analytical methods; Evaluation

Abstract: There is a need to rapidly quantify erosion from irrigated farmland. The prevailing method consists of collecting runoff samples, then filtering, drying and weighing them to determine sediment concentration. Labor cost and slow data availability prompted development of a faster, less expensive technique. Sediment settling volume in a graduated vessel was expected to correlate well with total mass of suspended sediment. Eight soils varying in texture, mineralogy, and organic-matter content were sampled, fragmented, and air dried. A series of 1-L suspensions was prepared with sediment concentrations from 1 to 30 g L-1. Samples were either hand shaken for 30 s or mechanically blended for 60 s. Suspensions were decanted into graduated Imhoff cones and allowed to settle for 0.5 h (1800 s). The series was repented three times for each soil. Settling volume was regressed against sediment concentration (total sediment, g L-1). Field calibrations for two soils were developed from furrow runoff samples. Laboratory regressions had a mean r2 of 0.99. Field regressions of two soils had r2 of 0.94 or higher. Cone design did not permit accurate volume estimates o(the first 1 mL, causing slopes and intercepts to very among field regressions for sediment concentrations < 1.0 g L-1. These samples, however, represent negligible erosion, and therefore

have little value. Slope and intercept of field regressions corresponded closely to 30-s-shaken laboratory regressions but different statistically at P less than or equal to 0.05. The technique provided a rapid, inexpensive, and accurate. rate suspended-sediment determination in the field for concentrations > 1.0 g L-1. Several settling-volume predictions based on textural components and organic-matter content had r2 > 0.60. Laboratory 30-s hand-shaken calibrations may be adequate for diagnostic purposes, but individual field calibrations should be performed for research purposes.

74 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

75 NAL Call. No.: HC79.P55J6
Integrating fishery and water resource management: a biological model of a California salmon fishery.
Fisher, A.C.; Hanemann, W.M.; Keeler, A.G.
Duluth, Minn. : Academic Press; 1991 May.
Journal of environmental economics and management v. 20 (3): p. 234-261; 1991 May. Includes references.

Language: English

Descriptors: California; Salmon; Fishery management; Water resources; Water management; Water flow; Hatcheries; Regulations; Water quality; Fresh water; Deltas; Dynamic models; Populations; Trends; Simulation; Quantitative analysis

76 NAL Call. No.: S583.A7
Interlaboratory study on the analysis of chlorobiphenyl congeners. Boer, J. de; Duinker, J.C.; Calder, J.A.; Meer, J van der Arlington, VA : AOAC International; 1992 Nov.
Journal of AOAC International v. 75 (6): p. 1054-1062; 1992 Nov. Includes references.

Language: English

Descriptors: Water pollution; Marine fouling; Polychlorinated biphenyls; Residues; Determination; Contamination; Sediment; Marine areas; Seals; Animal fat; Analytical methods

77 NAL Call. No.: 275.29 IO9PA
Iowa statewide rural well water survey.
Stoltenberg, D.; Vaughan, M.
Ames, Iowa : The Service; 1990 Oct.
PM - Iowa State University, Cooperative Extension Service (1396): 4 p.; 1990 Oct. Includes references.

Language: English

Descriptors: Iowa; Groundwater; Wells; Water quality; Sampling; Contaminants; Pesticides; Coliform bacteria

78 NAL Call. No.: 280.8 J822
IQ and lead exposure: analytic issues arising in the water lead and gasoline lead standards.
Pitcher, H.M.
Ames, Iowa : American Agricultural Economics Association; 1989 May. American journal of agricultural economics v. 71 (2): p. 475-479; 1989 May. Includes references.

Language: English

Descriptors: U.S.A.; Water composition and quality; Petroleum; Lead poisoning; Intelligence; Health hazards; Environmental pollution; Dosage effect; Analytical methods; Quality standards

79 NAL Call. No.: TD426.J68
Laboratory and field measurements of non-equilibrium transport in the Borden aquifer, Ontario, Canada.
Ptacek, C.J.; Gillham, R.W.
Amsterdam : Elsevier; 1992 Jul.
Journal of contaminant hydrology v. 10 (2): p. 119-158; 1992 Jul. Includes references.

Language: English

Descriptors: Ontario; Aquifers; Groundwater pollution; Halogenated hydrocarbons; Prediction; Laboratory methods; Sorption; Equilibration; Field experimentation; Equations

80 NAL Call. No.: 292.8 J82
Laboratory and numerical investigations of immiscible multiphase flow in soil. Host-Madsen, J.; Jensen, K.H.
Amsterdam : Elsevier Scientific Publishers, B.V.; 1992 Jul.
Journal of hydrology v. 135 (1/4): p. 13-52; 1992 Jul.
Includes references.

Language: English

Descriptors: Soil pollution; Groundwater pollution; Petroleum; Flow; Hydraulics; Laboratory tests; Simulation models;

Mathematical models; Quantitative analysis

Abstract: Immiscible multiphase flow in porous media is investigated by laboratory experiments and numerical simulations. The hydraulic parameters used in mathematical models for multiphase flow are determined experimentally, and the interrelations between the individual parameters are analysed. The experimental data support the applicability of analytical closed-form expressions for the constitutive relations, and a scaling procedure is verified in which the interfacial tensions are used to derive scaling factors. These simplifications in the parameter requirements are very valuable from an engineering point of view. A two-dimensional plexiglass flume is used for studying the flow of lighter-than-water, non-aqueous phase liquids (LNAPL) in sandy porous media. The migration of the LNAPL is observed both in the unsaturated zone and in the saturated zone at the bottom of the flume. A dual-gamma attenuation system is used for measuring the phase saturations of organic fluid, water, and air simultaneously without disturbing the flow. This permits a two-dimensional quantitative determination of the LNAPL plume in contrast to many earlier qualitative studies. A black oil reservoir model is used to simulate immiscible multiphase flow. By using the parameter estimation methods presented for establishing the constitutive relations, the model is applied to the simulation of the laboratory experiments. The experimental and numerical results compare reasonably well, thus supporting the adopted model formulation.

81 NAL Call. No.: QH540.J6
Leaching of nitrate from monolith lysimeters of different types of agricultural soils.
Bergstrom, L.; Johansson, R.
Madison, Wis. : American Society of Agronomy; 1991 Oct.
Journal of environmental quality v. 20 (4): p. 801-807; 1991 Oct. Includes references.

Language: English

Descriptors: Nitrate; Leaching; Drainage; Nitrate fertilizers; Lysimeters; Lysimetry; Soil organic matter; Agricultural soils; Peat soils; Clay soils; Sandy loam soils; Sandy soils; Loam soils; Monolith sampling; Leachates; Hordeum vulgare

Abstract: Nitrate leaching was measured in field lysimeters containing undisturbed soils of different texture and organic matter content. Spring barley (Hordeum distichum L.) was sown on each lysimeter and fertilized with 100 kg N ha-1. Each soil type received supplementary watering to simulate either "average" or "worst-case" precipitation. The largest leaching losses of NO3-, ca. 65 kg N ha-1 yr-1, occurred in a sandy soil that contained little organic matter and in a peat soil. Two loamy soils lost between 25 and 40 kg N ha-1 yr-1. Smallest leaching losses, ca. 20 kg N ha-1 yr-1 or less, occurred in a clay soil and another sandy soil rich in organic matter. With the exception of the clay and peat soils, the

watering treatment did not significantly affect the amounts of NO3- leached, although the temporal distribution of leaching was clearly influenced by weather conditions. The difference in leaching between the two sandy soils was explained by differences in crop growth, whereas leaching differences between soil types were mainly considered to be due to different textural and structural properties. The results show that to make a thorough comparison of NO3-leaching between different soil types they have to be tested simultaneously at the same site.

82 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

83 NAL Call. No.: 56.9 SO3
Macropore characterization for two tillage systems using resin-impregnation technique.
Singh, P.; Kanwar, R.S.; Thompson, M.L.
Madison, Wis. : The Society; 1991 Nov.
Soil Science Society of America journal v. 55 (6): p. 1674-1679; 1991 Nov. Includes references.

Language: English

Descriptors: Loam soils; No-tillage; Tillage; Continuous cropping; Zea mays; Macropores; Soil micromorphology; Characterization; Laboratory methods; Imagery; Polyesters; Resins; Comparisons; Field experimentation; Solutes; Leaching; Measurement; Porosity; Bulk density; Soil depth; Soil water content; Soil water movement

Abstract: This study used resin impregnation and image analysis to characterize macroporosity of a Nicollet loam soil (fine-loamy, mixed, mesic Aquic Hapludoll) under no-tillage and conventional tillage. Soil samples (7.5 by 5 by 5 cm) were taken at each 5-cm depth interval to determine macroporosity after conducting solute-leaching experiments on undisturbed soil columns. These soil samples were impregnated with either polyester or epoxy resin. Impregnated soil blocks were sectioned in the middle and ground to a smooth finish. Photographic slides were made of the horizontal faces and an automatic image analyzer was used to calculate the percentage of area occupied by macropores, and total perimeter, number, and size-frequency distribution of macropores. Percentage of area, perimeter, and number of macropores were not

statistically different for the two treatments. Macroporosity data obtained from the samples did not support the observations made in the solute-leaching studies on saturated soil columns (i.e., a greater degree of preferential flow in no-tillage columns) because the air-dried samples and the saturated columns had different porosity characteristics and because small, two-dimensional images were unable to sample any less frequently occurring larger pores. Another source of discrepancy between the results of the two studies may be macropore continuity. Two-dimensional analysis of porosity images does not provide a measure of pore continuity, which can be a decisive factor in solute transport through soil columns under different tillage systems. Results from the resin-impregnation study were not consistent with the results of a related field study. Inconsistency between the macroporosity data of these two studies were attributed to: the difference in minimum cut-off diameter of macropores in the two studies, the difference in sample size, and the difference in moisture status of the field and lab samples.

84 NAL Call. No.: S590.S652
Measures for runoff and erosion control on clayey soils: a review of trails carried out in the Apennines hilly area.
Chisci, G.
Cremlingen-Destedt, West Germany : CATENA-Verlag; 1989.
Soil technology series (1): p. 53-71; 1989. In the series analytic: Soil erosion protection measures in Europe / edited by U. Schwertmann, R.J. Rickson, and K. Auerswald. Proceedings of the European Community Workshop on Soil Erosion Protection, May 24-26, 1988, Freising, Germany. Includes references.

Language: English

Descriptors: Italy; Clay soils; Erosion control; Field tests; Runoff

85 NAL Call. No.: TD172.A7
Metal concentrations and tissues distribution in larvae of Chironomus with reference to X-ray microprobe analysis.
Krantzberg, G.; Stokes, P.M.
New York, N.Y. : Springer-Verlag; 1990 Jan.
Archives of environmental contamination and toxicology v. 19 (1): p. 84-93; 1990 Jan. Includes references.

Language: English

Descriptors: Chironomus; Larvae; Water pollution; Metals; Uptake; Chemical analysis; Analytical methods; Tissue analysis; Distribution

86 NAL Call. No.: 56.8 J823
A method for assessing the goodness of computer simulation of soil processes. Whitmore, A.P.
Oxford : Blackwell Scientific Publications; 1991 Jun.

The Journal of soil science v. 42 (2): p. 289-299; 1991 Jun. Includes references.

Language: English

Descriptors: Soil testing; Bromide; Diffusion; Nitrate nitrogen; Leaching; Movement in soil; Computer simulation; Simulation models; Assessment; Evaluation; Statistical analysis; Statistical data; Measurement; Variation; Experimental design; Replication; Temporal variation; Mathematics; Errors

Abstract: Any satisfactory computer simulation model of a soil process must match actual behaviour in the laboratory or field; a model can be evaluated by how well it does so. This paper describes a method for assessing models using anion diffusion and nitrate leaching as examples. The method partitions the sum of squares of the differences between measurement and simulation into two components, one calculated from the differences between the simulation and the mean of replicate measurements (the 'lack of fit'), and the other calculated from the variance within each set of replicate measurements (the 'pure error'). If the former is not significantly larger than the latter than the data present no grounds for rejecting the model. Where a model simulates the change in a process with time the method can also take account of how experimental error in the initial measurements affects the goodness of fit of the simulation of subsequent measurements. The method is particularly valuable where it is difficult or costly to take many replicate measurements, such as often happens in soil science or agriculture; nonetheless, some replicates must be taken.

87 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

88 NAL Call. No.: 56.9 SO3
A method to secure, leach, and incubate undisturbed soil cores. Myers, R.G.; Swallow, C.W.; Kissel, D.E.
Madison, Wis. : The Society; 1989 Mar.
Soil Science Society of America journal v. 53 (2): p. 467-471. ill; 1989 Mar. Includes references.

Language: English

Descriptors: Core sampling; Undisturbed sampling; Incubation; Leaching; Laboratory methods; Field moisture conditions; Nitrogen mineralization; Measurement; Accuracy; Apparatus

Abstract: Accurate N fertilizer recommendations depend upon knowing the amount of soil organic N that is mineralized. A promising method developed by Stanford and Smith (1972) to predict N mineralized with disturbed soil samples allows for adjustment in the mineralization rate due to field variations in soil temperature and water. Recent work has indicated that undisturbed soil cores could more closely represent the field soil and its mineralization characteristics. Therefore, a method was needed to secure undisturbed soil cores in a container that would maintain their field integrity and allow them to be incubated and leached periodically as per Stanford and Smith's technique. The method utilizes a 6.3-cm i.d. polyvinyl chloride (PVC) compression coupler to hold an undisturbed soil core. The undisturbed soil sampling device consists of a lever and anchor system, which can put pressure on a soil cutter and adjustment bar to force soil into the coupler. After a soil core is obtained from the field, the coupler is adapted so that the soil within can be leached, equilibrated to a constant water potential, and incubated. In extensive sampling of 19 soils that varied widely in clay and organic C contents, samples could be obtained rapidly if soil was near field capacity. This method of sampling and incubation was relatively inexpensive and simple, and produced data of cumulative N mineralized with time that could be fit with a first-order kinetic model.

89 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.

90 NAL Call. No.: S561.6.I8I35
Monitoring audience response to demonstration projects--baseline reports: Des Moines County.
Padgitt, S.C.
Ames, Iowa : The Extension; 1990 Jun.

IFM - Iowa State University Extension (8): 29 p.; 1990 Jun. Includes references.

Language: English

Descriptors: Iowa; Demonstration farms; Field tests; Information; Effects; Conservation tillage; Farmers' attitudes; Groundwater pollution; Water quality; Extension education; Surveys

91 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

92 NAL Call. No.: 292.9 AM34
New Zealand's national water quality monitoring network--design and first year's operation.
Smith, D.G.; McBride, G.B.
Minneapolis, Minn. : American Water Resources Association; 1990 Oct. Water resources bulletin v. 26 (5): p. 767-775. maps; 1990 Oct. Includes references.

Language: English

Descriptors: New Zealand; Surface water; Water quality; Monitoring; Sampling; Data collection; Data analysis

Abstract: The design and implementation of a national surface water quality monitoring network for New Zealand are described. Some of the lessons learned from the first year of operation are also addressed. Underpinning the design, and specified in advance, are the goal and objectives, the data quality assurance system, and the mechanism for data interpretation and reporting. Because of the difficulties associated with the use of a multitude of different agencies, only one agency is involved in field work and one laboratory undertakes the analysis. Staff training has been given a high priority. The network has been designed to give good trend detectability for regular sampling over a 5-10 year period.

93 NAL Call. No.: TD172.A7
Paritcle beam/liquid chromatography/mass spectrometry of national pesticide survey analytes.
Miles, C.J.; Doerge, D.R.; Bajic, S.

New York, N.Y. : Springer-Verlag; 1992 Feb.
Archives of environmental contamination and toxicology v. 22 (2): p. 247-251; 1992 Feb. Includes references.

Language: English

Descriptors: U.S.A.; Groundwater pollution; Pesticides; Surveys; Environmental protection; Public agencies; Analytical methods

94 NAL Call. No.: 56.8 J822
Participation in the CRP: implications of the New York experience. Force, D.; Bills, N.
Ankeny, Iowa : Soil and Water Conservation Society of America; 1989 Sep. Journal of soil and water conservation v. 44 (5): p. 512-516; 1989 Sep. Includes references.

Language: English

Descriptors: New York; Soil conservation; Water conservation; Regression analysis; Flexibility; Water quality

95 NAL Call. No.: QP501.P72
Pesticides in ground water: conduct of field research studies.
Jones, R.L.
Chichester, W. Sussex : John Wiley & Sons; 1990.
Progress in pesticide biochemistry and toxicology v. 7: p. 827-46; 1990. In the series analytic: Environmental fate of pesticides / edited by D.H. Hutson and T.R. Roberts. Includes references.

Language: English

Descriptors: Pesticides; Groundwater; Groundwater pollution; Soil pollution; Movement in soil; Degradation; Monitoring; Sampling; Soil analysis

96 NAL Call. No.: TD201.A72
The phosphate load of the river Rhine 1975-1986.
De Jong, A.L.; De Oude, N.T.; Smits, A.H.; Volz, J.
Oxford : Blackwell Scientific Publications; 1989 Jun.
Aqua v. 38 (3): p. 176-188. maps; 1989 Jun. Includes references.

Language: English

Descriptors: Netherlands; Rivers; Phosphates; Water pollution; Detergents; Water composition and quality; Estimates; Statistical analysis

97 NAL Call. No.: 64.8 C883
Population structuring of near infrared spectra and modified partial least squares regression.

Shenk, J.S.; Westerhaus, M.O.
Madison, Wis. : Crop Science Society of America; 1991 Nov.
Crop science v. 31 (6): p. 1548-1555; 1991 Nov. Includes references.

Language: English

Descriptors: Agricultural products; Quality; Maize; Wheat; Barley; Hay; Haylage; Spectral analysis; Infrared spectroscopy; Representative sampling; Variation; Spectral data; Calibration; Computer software; Regression analysis; Frequency distribution; Prediction

Abstract: The computer programs CENTER and SELECT have been presented as a way to establish population boundaries and choose samples for near infrared calibrations. This study was conducted to evaluate calibrations derived on samples chosen by CENTER and SELECT from broad groups of hay, haylage, corn (Zea mays L.), wheat (Triticum aestivum L.), and barley (Hordeum vulgare L.) samples. Population boundaries were established with a maximum standardized H distance from the average spectrum of 3.0. Every fifth sample was reserved for equation validation. Calibration samples were selected with a minimum standardized H distance between samples of 0.6. Forage samples were found to have more diverse spectra and chemistry than grain samples. Average r2 values were smaller, numbers of eigenvectors were larger, and standard deviations of laboratory reference values were larger for forages than for grains. The standard error of performance (SEP) for all samples and SEP for samples chosen by SELECT with a limit of 0.6 were similar for four of five products. Calibrations were developed using five different math treatments with and without multiplicative scatter correction (De-trend). First derivative was the best math treatment for protein in all products. Second derivative was best for acid-detergent fiber (ADF) in forage products, but no single math treatment was superior for ADF in grain products. De-trend improved SEP in 28 of 50 calibrations.

98 NAL Call. No.: TD172.J61
Potential interferences in the analysis of atrazine and deethylatrazine in soil and water.
Koskinen, W.C.; Otto, J.M.; Jarvis, L.J.; Dowdy, R.H.
New York, N.Y. : Marcel Dekker; 1992 Jun.
Journal of environmental science and health : Part B : Pesticides, food contaminants, and agricultural wastes v. 27 (3): p. 255-268; 1992 Jun. Includes references.

Language: English

Descriptors: Herbicide residues; Atrazine; Prynachlor; Soil pollution; Water pollution; Chemical analysis; Analytical methods; Interference

99 NAL Call. No.: 56.9 SO3

Potential sampling error: trace metal adsorption on vacuum porous cup samplers.
McGuire, P.E.; Lowery, B.; Helmke, P.A.
Madison, Wis. : The Society; 1992 Jan.
Soil Science Society of America journal v. 56 (1): p. 74-82; 1992 Jan. Includes references.

Language: English

Descriptors: Soil water; Soil solution; Sampling; Errors; Adsorption; Desorption; Cadmium; Cobalt; Chromium; Zinc; Ions; Samplers; Ceramics; Glass; Stainless steel; Ph; Cleaning; Volume; Duration; Groundwater pollution; Monitoring

Abstract: The adsorption of trace metals on ceramic, polytetrafluoroethylene (PTFE or Teflon), fritted glass, and stainless steel vacuum pore-water samplers and silica packing material used to seat samplers was evaluated with respect to potential sampling errors. A solution containing radio-labeled Cd+2, Co+2, Cr+3 and Zn+2 and a mix of ions typically found in soil solutions was used to assess specific absorption of inorganics to porous cups of samplers and to silica. Four sets of samplers were cleaned with acid or water and then treated with a solution containing trace metals at concentrations near primary or secondary drinking-water standards or one order of magnitude lower for 2 or 7 d. After treatment, the samplers were rinsed with 10 or 30 pore volumes (PV) of simulated soil solution and radioassayed. Duplicate silica samples were treated with the high-trace-metal solution adjusted to a pH of 4, 6, or 8 for a 5-d period, rinsed with simulated soil solution, and radioassayed. Adsorption was greatest on samplers treated with high trace-metal concentrations and samplers cleaned with water. Desorption of both Co and Zn occurred with the 30-PV soil solution rinse for all sampler types except stainless steel. The general pattern of metal adsorption on samplers was ceramic > stainless steel > > fritted glass = PTFE. The general order that trace metal adsorbed to samplers and silica was Zn > > Co > Cr > Cd. At pH values of 6 to 8, trace-metal adsorption on silica (mass of adsorbent/mass of adsorbate) was similar to or greater than that observed for ceramic samplers. This study shows that adsorption-desorption processes can cause sampling error when analysis of trace metals at microgram-per-liter concentration levels is necessary.

100 NAL Call. No.: QH545.A1E29
Prediction of heavy metal behavior in soil by means of simple field tests. Blume, H.P.; Brummer, G.
Orlando, Fla. : Academic Press; 1991 Oct.
Ecotoxicology and environmental safety v. 22 (2): p. 164-174; 1991 Oct. Includes references.

Language: English

Descriptors: Soil pollution; Polluted soils; Heavy metals; Metal ions; Sorption; Soil ph; Redox potential; Soil organic

matter; Soil texture; Iron oxides; Infiltration; Groundwater pollution

101 NAL Call. No.: 292.9 AM34
Problems and methods involved in relating land use to ground-water quality. Barringer, T.; Dunn, D.; Battaglin, W.; Vowinkel, E.
Minneapolis, Minn. : American Water Resources Association; 1990 Feb. Water resources bulletin v. 26 (1): p. 1-9. ill., maps; 1990 Feb. Includes references.

Language: English

Descriptors: Groundwater pollution; Water composition and quality; Land use; Organic compounds; Statistical analysis; Spatial equilibrium analysis

102 NAL Call. No.: 80 AC82
Problems of irrigation with polluted waters in greenhouses. Azpiazu, M.N.
Wageningen : International Society for Horticultural Science; 1989 Sep. Acta horticulturae (246): p. 97-104; 1989 Sep. Paper presented at the "International Symposium on Protected Cultivation of Ornamentals in Mild Winter Climates," October 18-21, 1988, Tenerife (Canary Islands), Spain. Includes references.

Language: English

Descriptors: Spain; Greenhouse crops; Irrigation water; Water pollution; Heavy metals; Uptake; Nutrient uptake; Laboratory methods

103 NAL Call. No.: TD172.J6
The properties of various statistical prediction intervals for ground-water detection monitoring.
Gibbons, R.D.; Baker, J.
New York, N.Y. : Marcel Dekker; 1991.
Journal of environmental science and health : Part A : Environmental science and engineering v. 26 (4): p. 535-553; 1991. Includes references.

Language: English

Descriptors: Groundwater pollution; Detection; Monitoring; Prediction; Statistical methods; Simulation

104 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

105 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

106 NAL Call. No.: 464.8 AN72
Quantifying pesticide behavior in soil.
Wagenet, R.J.; Hutson, J.L.
Palo Alto, Calif. : Annual Reviews, Inc; 1990.
Annual review of phytopathology v. 28: p. 295-319; 1990.
Literature review. Includes references.

Language: English

Descriptors: Pesticides; Quantitative analysis; Simulation models; Mathematical models; Leaching; Movement in soil; Pesticide residues; Transformation; Degradation; Volatilization; Literature reviews

107 NAL Call. No.: 475 J824
Quantitative analysis of total resin acids by high-performance liquid chromatography of their coumarin ester derivatives.
Richardson, D.E.; Bremner, J.B.; O'Grady, B.V.
Amsterdam : Elsevier Science Publishers; 1992 Mar20.
Journal of chromatography v. 595 (1/2): p. 155-162; 1992 Mar20. Includes references.

Language: English

Descriptors: Resin acids; Pulping; Pulp mill effluent; Water pollution; Determination; Hplc

108 NAL Call. No.: QK900.J67
A quantitative study of vegetation--environment relationships in two Egyptian deserts.
Dargie, T.C.D.; El Demerdash, M.A.
Knivsta, Sweden : Opulus Press; 1991 Feb.
Journal of vegetation science v. 2 (1): p. 3-10. maps; 1991 Feb. Includes references.

Language: English

Descriptors: Egypt; Desert plants; Coastal plains; Ecosystems; Environmental factors; Site factors; Water quality

109 NAL Call. No.: QE1.E5
Radionuclide partitioning across Great Lakes natural interfaces. Platford, R.F.; Joshi, S.R.
New York, N.Y. : Springer; 1989 Nov.
Environmental geology and water sciences v. 14 (3): p. 183-186; 1989 Nov. Includes references.

Language: English

Descriptors: Canada; U.S.A.; Water pollution; Lakes; Radionuclides; Sampling; Radiation; Interface phenomena

110 NAL Call. No.: QD1.A45
Regional and targeted groundwater quality networks in the Delmarva Peninsula. Koterba, M.T.; Shedlock, R.J.; Bachman, L.J.; Phillips, P.J. Washington, D.C. : The Society; 1991.
ACS Symposium series - American Chemical Society (465): p. 110-138; 1991. In the series analytic: Groundwater residue sampling design / edited by R.G. Nash and A.R. Leslie. Includes references.

Language: English

Descriptors: Delaware; Maryland; Virginia; Groundwater; Water quality; Sampling

Abstract: A multi-network monitoring and quality-assurance program was designed to assess the occurrence and distribution of selected pesticides and nutrients in groundwater in the Delmarva Peninsula in Delaware, Maryland, and Virginia. As part of the U.S. Geological Survey's National Water-Quality Assessment (NAWQA) Program, four interrelated networks were established with wells distributed regionally across the peninsula and locally in small watersheds. Data from these networks are being used to assess groundwater quality relative to differences in soil, land use, geomorphology, physiography, and hydrogeology at regional and local scales. An accompanying quality-assurance program was designed to help ensure accurate data and determine whether differences in water quality among network samples result from changes in hydrologic setting or are from sampling design.

111 NAL Call. No.: QD241.T6
Regression models for some solute distribution equilibria in the terrestrial environment.
Noegrohati, S.; Hammers, W.E.
Reading : Gordon and Breach Science Publishers; 1992.
Toxicological and environmental chemistry v. 34 (2/4): p.

175-185; 1992. Includes references.

Language: English

Descriptors: Organochlorine insecticides; Soil; Sorption; Solvents; Leaching; Regression analysis

Abstract: Sorption coefficients (K(p)) of several organochlorine insecticides (OCs) in volcanic ash silt from Central Java are presented. Selected experimental and estimated octanol-water partition coefficient (P) values are used to study log-log regressions with K(p) data collected from the literature (PAHs, chlorophenols, phenylureas, chloro-s-triazines, carbamates and organophosphorus insecticides) and those of the OCs determined in the present study. Leaching distances and bioactivities in soil are correlated with the K(p) values of the pesticides, and with the organic matter and the water content of the soil.

112 NAL Call. No.: GB746.W33
Regularities of migration of trace elements in natural waters of the arid zone by radioanalytical methods.
Isamatov, E.E.; Kulmatov, R.A.; Kist, A.A.
New York, N.Y. : Consultants Bureau; 1989 May.
Water resources v. 15 (4): p. 372-378. ill., maps; 1989 May.
Translated from: Vodnye Resursy, (4), p. 103-109, July-August, 1988. (GB746.V55). Includes references.

Language: English; Russian

Descriptors: Uzbek ssr; Water pollution; River water; Pollutants; Heavy metals; Trace elements; Arid zones; Analytical methods

113 NAL Call. No.: QH540.J6
Relations among NaOH-extractable phosphorus, suspended solids, and ortho-phosphorus in streams of Wyoming.
Parker, M.
Madison, Wis. : American Society of Agronomy; 1991 Jan.
Journal of environmental quality v. 20 (1): p. 271-278; 1991 Jan. Includes references.

Language: English

Descriptors: Wyoming; Orthophosphates; Phosphorus; Particles; Suspensions; Bioavailability; Eutrophication; River water; Sampling; Sewage effluent; Streams; Water quality; Castor

Abstract: During 1984-1986, 369 water samples from seven streams and a sewage treatment plant in Wyoming were analyzed for NaOH-extractable P (NaOH-P; a possible index of biologically available P), ortho-P (OP), and suspended solids (SS). Regressions predicting NaOH-P were developed from data on SS and OP, plus information on variability in time (year of sampling), meteorology (volume discharge), nd presence/absence

of beaver (Castor sp.) dams. Scatter plots, ANOVA, and cluster analyses indicated data could be aggregated into four groups reflecting processes that differ among the eight stations (e.g., relations among volume discharge, SS, and OP). These groups are composed of one to three stations, and index a component of spatial variability. Adjusted R2 and precision (95% confidence limits for the mean) always tended to be poor when OP was more influential in affecting NaOH-P than were SS (R2 = 21-88%); only in some cases where SS were highly influential were adjusted R2 and precision good. If data presented are representative, then the best precision obtainable from regressions will be about +/- 50% of the mean value for NaOH-P. This value compares favorably with many other techniques, so predicting NaOH-P from regressions should be useful for some applications.

114 NAL Call. No.: TD172.A7
Reliability of heavy metal pollution monitoring utilizing aquatic animals versus statistical evaluation methods.
Mastala, Z.; Balogh, K.V.; Salanki, J.
New York, N.Y. : Springer-Verlag; 1992 Nov.
Archives of environmental contamination and toxicology v. 23 (4): p. 476-483; 1992 Nov. Includes references.

Language: English

Descriptors: Hungary; Freshwater molluscs; Freshwater fishes; Metals; Concentration; Water pollution; Monitoring; Comparisons; Statistical methods; Analysis of variance; Analysis of covariance

115 NAL Call. No.: TD420.A1E5
Sampling bias caused by materials used to monitor halocarbons in groundwater. Reynolds, G.W.; Hoff, J.T.; Gillham, R.W.
Washington, D.C. : American Chemical Society; 1990 Jan.
Environmental science & technology v. 24 (1): p. 135-142; 1990 Jan. Includes references.

Language: English

Descriptors: Groundwater pollution; Organic compounds; Halogenated hydrocarbons; Sorption; Techniques; Sampling

116 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.

117 NAL Call. No.: QH540.J6
Sampling unsaturated-zone water for trichloroethene at Picatinny Arsenal, New Jersey.
Smith, J.A.; Cho, H.J.; Jaffe, P.R.; MacLeod, C.L.; Koehnlein, S.A. Madison, Wis. : American Society of Agronomy; 1992 Apr.
Journal of environmental quality v. 21 (2): p. 264-271; 1992 Apr. Includes references.

Language: English

Descriptors: New Jersey; Chlorinated hydrocarbons; Bound water; Soil pollution; Water pollution; Sampling; Lysimetry; Lysimetric chromatography; Industrial sites

Abstract: A new method of collecting samples of unsaturated-zone water for quantitative analysis for a volatile organic compound, trichloroethene (TCE), was compared to three other, previously described sampling methodologies in the laboratory and in the field. In the laboratory, prepared water samples containing TCE in a known concentration (20 micrograms/L) were sampled repeatedly by using each of the four methods to quantify method precision and accuracy. To compare the four methods in the field, unsaturated-zone water above a TCE-contaminated water-table aquifer was transferred from a depth of 2 m to land surface with 0.15-m-long suction lysimeters attached to 1.85-m lengths of stainless-steel tubing. Statistical analyses of the laboratory and field data indicate that the new method, which involves collecting the water samples in gas-tight glass syringes, is superior to the other three methods for the quantitative sampling and analysis of TCE on the basis of its high precision and accuracy and ease of use. This method was used to collect additional samples from the field site to quantify the spatial variability of TCE concentrations in the unsaturated-zone water. Results of analysis of variance of the data indicate that the spatial concentration variability is important, and that differences in TCE concentration are statistically significant for horizontal distances less than 3.6 m.

118 NAL Call. No.: 290.9 AM32P
Selection of flumes for small watershed instrumentation.
Yoder, D.C.; Monke, E.J.

St. Joseph, Mich. : The Society; 1989.
Paper - American Society of Agricultural Engineers (89-2514): 12 p.; 1989. Paper presented at the 1989 International Winter Meeting of the American Society of Agricultural Engineers, December 12-15, 1989, New Orleans, Louisiana. Includes references.

Language: English

Descriptors: Watersheds; Chutes; Runoff

119 NAL Call. No.: 292.8 W295
Selection of methods for the detection and estimation of trends in water quality.
Hirsch, R.M.; Alexander, R.B.; Smith, R.A.
Washington, D.C. : American Geophysical Union; 1991 May.
Water resources research v. 27 (5): p. 803-813; 1991 May.
Includes references.

Language: English

Descriptors: U.S.A.; Streams; Water quality; Trends; Statistical methods; Applications

Abstract: One result of increased scientific and public interest in water quality over the past few decades has been the gradual accumulation of reliable long-term water quality data records and an interest in examining these data for long-term trends. This paper summarizes and examines some of the major issues and choices involved in detecting and estimating the magnitude of temporal trends in measures of stream water quality. The first issue is the type of trend hypothesis to examine: step trends versus monotonic trend. The second relates to the general category of statistical methods to employ: parametric versus nonparametric. The third issue relates to the kind of data to analyze: concentration data versus flux data. The fourth relates to issues of data manipulation to achieve the best results from the trend analysis. These issues include the use of mathematical transformations of the data and the removal of natural sources of variability in water quality due to seasonal and stream discharge variations. The final issue relates to the choice of a trend technique for the analysis of data records with censored or "less than" values. The authors' experiences during the past decade with the development of several trend detection techniques and application of these techniques to a large number of water quality records provide insight into the issues related to a choice of a statistical test for trend in water quality.

120 NAL Call. No.: QH344.N87
Sequential stemflow sampling for estimation of dry deposition and crown leaching in beech stands.
Kazda, M.
New York : Elsevier Applied Science; 1990.

Nutrient cycling in terrestrial ecosystems : field methods, applications, and interpretation / edited by A.F. Harrison, P. Ineson, and D.W. Heal. p. 46-55; 1990. Includes references.

Language: English

Descriptors: Austria; Fagus sylvatica; Canopy; Stemflow; Precipitation; Nutrients; Concentration; Deposition; Crown; Leaching; Models

121 NAL Call. No.: S671.A66
Shallow groundwater and surface runoff instrumentation for small watersheds. Cullum, R.F.; Schreiber, J.D.; Smith, S. Jr; Grissinger, E.H. St. Joseph, Mich. : American Society of Agricultural Engineers; 1992 Jul. Applied engineering in agriculture v. 8 (4): p. 449-453; 1992 Jul. Includes references.

Language: English

Descriptors: Mississippi; Watersheds; Groundwater pollution; Groundwater; Runoff; Water quality; Instrumentation; Quantitative analysis; Pesticides; Nitrate; No-tillage; Minimum tillage; Tillage

Abstract: An acquisition system was constructed to sample and quantify surface runoff and shallow groundwater. The main components of the system for shallow groundwater included hydrologically isolated erosion plots with subsurface drains (installed via horizontal drilling), outlets into sumps, tipping buckets mounted under drain outlets, composite water samplers, and a series of sampling piezometers ranging from 0.3- to 6.1-m (1- to 20-ft) depths positioned in one row of each main plot. The main components of the system for surface runoff from standardized erosion plots cropped to corn were appropriately sized collectors, approaches, H-flumes equipped with portable liquid-level recorders, runoff splitters, dataloggers, and composite water samplers. The dataloggers recorded rainfall and runoff every minute and groundwater discharge volume every 15 minutes during storm events. Water samplers were activated by the dataloggers when the cumulative discharge volumes equaled or exceeded a preset condition. Derived variables from surface runoff were incremental discharge rate, cumulative discharge volume, sediment loads, and water quality. Groundwater incremental discharge and total discharge volumes were recorded and the composite of the weighted-discharge samples were analyzed for specific chemicals introduced as fertilizer or pesticides. Depth of free water within each piezometer after major storm events was monitored to determine water movement in the root and vadose zones.

122 NAL Call. No.: TD172.J6
Simulating the degradation of TCE under methanogenesis. Baek, N.H.; Jaffe, P.R.; Shingal, N.

New York, N.Y. : Marcel Dekker; 1990.
Journal of environmental science and health : Part A : Environmental science and engineering v. 25 (8): p. 987-1005; 1990. Includes references.

Language: English

Descriptors: Groundwater pollution; Organic compounds; Biodegradation; Bacteria; Degradation; Kinetics; Methane production; Laboratory methods; Simulation; Techniques; Aquifers

123 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

124 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.

125 NAL Call. No.: QH545.A1E58
Solid-phase extraction of carbaryl and malathion from pond and well water. Beyers, D.W.; Carlson, C.A.; Tessari, J.D.
Elmsford, N.Y. : Pergamon Press; 1991.
Environmental toxicology and chemistry v. 10 (11): p. 1425-1429; 1991. Includes references.

Language: English

Descriptors: Carbaryl; Malathion; Water pollution; Insecticide residues; Analytical methods; Extraction; Ponds; Wells

126 NAL Call. No.: 381 AS7
Solid-phase extraction of carbofuran, atrazine, simazine, alachlor, and cyanazine from shallow well water.
Nash, R.G.
Arlington, Va. : The Association; 1990 May.
Journal of the Association of Official Analytical Chemists v. 73 (3): p. 438-442; 1990 May. Includes references.

Language: English

Descriptors: Wells; Drinking water; Water pollution; Atrazine; Carbofuran; Alachlor; Cyanazine; Simazine; Analytical methods; Sample pretreatment; Extraction

127 NAL Call. No.: QH545.A1E58
Statisical treatment of data from microbial toxicity tests.
Nyholm, N.; Sorensen, P.S.; Kusk, K.O.
Elmsford, N.Y. : Pergamon Press; 1992.
Environmental toxicology and chemistry v. 11 (2): p. 157-167; 1992. Includes references.

Language: English

Descriptors: Phytoplankton; Scenedesmus; Chlorophyta; Toxic substances; Pollutants; Phytotoxicity; Testing; Tests; Regression analysis; Water pollution

128 NAL Call. No.: 292.8 W295
Statistical analysis of spatial variability in unsaturated flow parameters. Russo, D.; Bouton, M.
Washington, D.C. : American Geophysical Union; 1992 Jul.
Water resources research v. 28 (7): p. 1911-1925; 1992 Jul.
Includes references.

Language: English

Descriptors: Sandy loam soils; Unsaturated flow; Leaching; Soil properties; Hydraulic conductivity; Soil water retention; Spatial variation; Stochastic models; Statistical analysis; Autocorrelation; Prediction

Abstract: Core scale estimates of soil parameters of the Gardner-Russo and van Genuchten models of the hydraulic conductivity and water retention functions were obtained for 417 undisturbed soil cores taken from a wall of a trench (20 m long, 2.5 m deep), using a procedure based on inverse problem methodology. These estimates were used to evaluate the first two statistical moments of the underlying random space functions (RSFs), using the restricted maximum likelihood estimation procedure, coupled with the weighted least squares procedure, to estimate parameters of models of the covariance and the drift functions of the pertinent RSFs. The fitted models were used to evaluate the mean and covariance functions of the hydraulic conductivity and water retention functions for given water saturations. Covariance functions of log-saturated conductivity (log Ks) and the "shape" parameters of the Gardner-Russo and van Genuchten models exhibited statistical anisotropy characterized by aspect ratios that vary between 3 to 4. Correlation scales of log Ks were larger than those of the "shape" parameters. Consequently, the product of the variance of log unsaturated conductivity and its correlation scale remained essentially invariant for a considerable range of water saturation. The implications of these results regarding stochastic modeling of transport in heterogeneous porous formations and possible applications of the results of this study are discussed briefly.

129 NAL Call. No.: 290.9 AM3PS (EE)
Statistical evaluation of mechanistic water-quality models.
Reckhow, K.H.; Clements, J.T.; Dodd, R.C.
New York, N.Y. : American Society of Civil Engineers, Environmental Engineering Division; 1990 Mar.
Journal of environmental engineering v. 116 (2): p. 250-268; 1990 Mar. Includes references.

Language: English

Descriptors: Water quality; Simulation models; Statistical methods; Statistical analysis

130 NAL Call. No.: TD196.P38L66
Studies on the transport and fate of chlordane in the environment. Puri, R.K.; Orazio, C.E.; Kapila, S.; Clevenger, T.E.; Yanders, A.F.; McGrath, K.E.; Buchanan, A.C.; Czarnezki; J; Bush, J.
Chelsea, Mich. : Lewis Publishers; 1990.
Long range transport of pesticides / David A. Kurtz, editor.
p. 271-289; 1990. Includes references.

Language: English

Descriptors: Missouri; Chlordane; Freshwater fishes; Indicator species; Insecticide residues; Leaching; Persistence; Rivers; Sampling; Sediment; Soil pollution; Water pollution; Clay soils; Sandy soils

131 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.

132 NAL Call. No.: TD223.N36 1992
Synoptic survey of dairy farms in the Lake Okeechobee basin: post-BMP water quality sampling.
Sawka, G.J.; Ritter, P.; Gunsalus, B.; Rompot, T.
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. 393-400; 1992. Includes references.

Language: English

Descriptors: Florida; Water quality; Water management; Phosphorus; Dairy farms

133 NAL Call. No.: S451.P4P45
Targeting pesticides.
Weidner, K.
University Park, Pa. : Pennsylvania State University; 1989.
PennState agriculture. p. 12-14, 16-17. ill; 1989.

Language: English

Descriptors: Pennsylvania; Pesticide residues; Monitoring; Analytical methods; University research; Runoff; Environmental pollution; Soil pollution; Water pollution

134 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.

135 NAL Call. No.: QH545.A1E52
Throughfall below grassland canopies: a comparison of conventional and ion exchange methods.
Dam, D. van; Heil, G.W.; Heijne, B.; Bobbink, R.

Essex : Elsevier Applied Science; 1991.
Environmental pollution v. 73 (2): p. 85-99; 1991. Includes references.

Language: English

Descriptors: Netherlands; Chalk grasslands; Canopy; Stemflow; Throughfall; Ions; Methodology; Sampling; Ion exchange resins; Foliar uptake; Nitrogen; Seasonal variation; Determination; Comparisons

136 NAL Call. No.: S583.A7
Trace-level quantitative of sulfonylurea herbicides in natural water. Thompson, D.G.; MacDonald, L.M.
Arlington, VA : AOAC International; 1992 Nov.
Journal of AOAC International v. 75 (6): p. 1084-1090; 1992 Nov. Includes references.

Language: English

Descriptors: Sulfonylurea herbicides; Herbicide residues; Water quality; Quantitative analysis; Analytical methods

137 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

138 NAL Call. No.: SB610.W39
A tractor mounted sampler for obtaining large soil columns. Walker, D.S.; O'Dell, J.D.; Wolt, J.D.; Rhodes, G.N. Jr; Graveel, J.G. Champaign, Ill. : The Society; 1990 Oct.
Weed technology : a journal of the Weed Science Society of America v. 4 (4): p. 913-917; 1990 Oct. Includes references.

Language: English

Descriptors: Soil; Core sampling; Pesticide residues; Leaching; Tractors; Hydraulic power systems

139 NAL Call. No.: 292.9 AM34
Uncertainty analysis of runoff estimates from a runoff contour map. Rochelle, B.P.; Stevens, D.L. Jr; Church, M.R.
Minneapolis, Minn. : American Water Resources Association;

1989 Jun. Water resources bulletin v. 25 (3): p. 491-498. maps; 1989 Jun. Includes references.

Language: English

Descriptors: Watersheds; Runoff water; Mapping; Acid rain; Water pollution; Uncertainties; Statistical analysis; Estimates; Computer analysis; Surveys

140 NAL Call. No.: QH545.P4P4844
Use of solid-phase resins in pesticide monitoring.
Bittinger, J.A.; Bishop, J.W.
Blacksburg : Virginia Water Resources Research Center, VPI and State University; 1989.
Pesticides in terrestrial and aquatic environments : proceedings of a national research conference, May 11-12, 1989 / edited by Diana L. Weigmann. p. 265-269; 1989. Includes references.

Language: English

Descriptors: Atrazine; Monitoring; Pesticide residues; Resins; Sampling; Water pollution

141 NAL Call. No.: FICHE S-72
Using graphic interfaces to present the results of erosion models. Bingner, R.L.
St. Joseph, Mich. : The Society; 1989.
American Society of Agricultural Engineers (Microfiche collection) (89-2022): 15 p.; 1989. Paper presented at the 1989 International Summer Meeting of the ASAE and the CSAE held June 25-28, 1989, Quebec, Canada. Includes references.

Language: English

Descriptors: Erosion; Runoff; Sediment yield; Watersheds; Simulation models; Computer graphics; Statistical analysis

142 NAL Call. No.: FU101F636c 1040
Water quality sampling and analysis instruments and procedures. Taylor, L. A.; Izuno, Forrest T.; Bottcher, A. B.
Florida Cooperative Extension Service
Gainesville, Fla. : Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida,; 1992.
[10] p. : ill. ; 28 cm. (Circular (Florida Cooperative Extension Service) ; 1040.). Title from cover. October 1992.
Includes bibliographical references (p. [10]).

Language: English; English

Descriptors: Agricultural pollution; Water quality; Water; Water quality management

143 NAL Call. No.: 275.29 F66C
Water quality sampling and analysis instruments and procedures. Taylor, L.A.; Izuno, F.T.; Bottcher, A.B.
Gainesville, Fla. : The Service; 1992 Oct.
Circular - Florida Cooperative Extension Service (1040): 10 p.; 1992 Oct. Includes references.

Language: English

Descriptors: Water quality; Sampling; Instruments; Ph; Electrical conductivity; Hardness; Nitrogen; Phosphorus

144 NAL Call. No.: QD1.A45
Water quality sampling program at low-level radioactive groundwater contamination site: Wood River Junction, Rhode Island.
Ryan, B.J.; Healy, D.F.
Washington, D.C. : The Society; 1991.
ACS Symposium series - American Chemical Society (465): p. 242-254; 1991. In the series analytic: Groundwater residue sampling design / edited by R.G. Nash and A.R. Leslie. Includes references.

Language: English

Descriptors: Rhode Island; Groundwater; Water pollution; Radioactive wastes; Sampling

145 NAL Call. No.: TD420.A1E5
The way it was: analysis of organics in water in 1967.
Keith, L.H.
Washington, D.C. : American Chemical Society; 1991 Apr.
Environmental science & technology v. 25 (4): p. 564-565; 1991 Apr.

Language: English

Descriptors: U.S.A.; Water pollution; Pollutants; Organic compounds; Research; Identification; Analytical methods

146 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.

147 NAL Call. No.: 57.09 F41
Well sampling methods, costs, EPA protocols.
Huggins, B.
Glen Arm, Md. : Fertilizer Industry Round Table; 1989.
Proceedings of the annual meeting - Fertilizer Industry Round Table (39th): p. 148-152; 1989. Meeting held October 31 - November 2, 1989, Atlanta, Georgia.

Language: English

Descriptors: Wells; Water quality; Sampling; Costs; Environmental legislation

148 NAL Call. No.: TD403.G7
Well-purging criteria for sampling purgeable organic compounds. Gibs, J.; Imbrigiotta, T.E.
Dublin, Ohio : Water Well Journal Publishers; 1990 Jan.
Ground water v. 28 (1): p. 68-78; 1990 Jan. Includes references.

Language: English

Descriptors: Groundwater pollution; Organic compounds; Sampling; Wells; Aquifers; Water composition and quality; Flushing

149 NAL Call. No.: TD367.S75
Wildland water quality sampling and analysis.
Stednick, John D.
San Diego : Academic Press,; 1991.
xii, 217 p. : ill. ; 23 cm. Includes bibliographical references and index.

Language: English

Descriptors: Water quality; Water chemistry

AUTHOR INDEX

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SEARCH STRATEGY

Set	Items	Description
S1	6769	((FIELD()EXPERIMENT? OR TEST?)) OR (lABORATORY() (METHOD? OR PRACTICE? OR PROCEDURE?)))/TI,DE,ID
S2	18251	(((STATISTICAL OR ANALYTICAL OR QUANTITATIVE OR REGRESSION)() (ANALYS?S OR METHOD? OR DATA OR STUD?)) OR SAMPLING OR INSTRUMENTATION)/TI,DE,ID
S3	24789	S1 OR S2
S4	14020	((WATER OR GROUNDWATER OR (GROUND()WATER) OR AGRICULTUR?) (2N) (QUALIT? OR POLLUT? OR CONTAMINA?))/TI,DE,ID
S5	5354	(NPS? OR ((NON()POINT OR NONPOINT)90 SOURCE()POLLUT? OR BMP? OR (BEST()MANAGEMENT()PRACTICE?) OR LEACHING OR RUNOFF)/TI,DE,ID
S6	515	(S4 OR S5) AND S3
S7	206	S6 AND PY=1989:1993

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