

# JIM V. ROUSE | Principal Geohydrologist

## EDUCATION

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1967, Masters of Science, Hydrology, Stanford University  
1961, Geological Engineer Degree, Colorado School of Mines

## SUMMARY

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Mr. Rouse has 50 years of relevant experience, including 17 years with various Federal agencies and 28 years as a consultant to industry throughout the United States, Canada, Australia, and New Zealand. He is internationally known for his work on the subsurface behavior of heavy metals and radionuclides, and has developed innovative approaches for *in-situ* remediation of metals, especially hexavalent chromium, in soil and ground water, starting in 1982. Mr. Rouse has authored more than 50 publications, dealing primarily with the subject of natural and man-aided attenuation of heavy metal, radiochemical, and cyanide contamination, and vadose zone monitoring. He has made a number of presentations to technical meetings and taught numerous short courses. He has been qualified as an expert witness approximately 30 times, in the area of heavy metal and radiochemical migration and remediation.

Mr. Rouse has been involved in investigation, design, and operation of *in-situ* remediation systems for soil and ground-water contamination by hexavalent chromium at more than a dozen sites in Indiana, California, Texas, Maryland, Colorado, as well as Australia, Scotland, Switzerland and New Zealand, starting in 1982. These are in geological environments ranging from low permeability silts and clays to uniform, permeable glacial outwash sands, and include karst limestone. Delivery systems have included injection wells, infiltration trenches, infiltration galleries, borehole-placed reactive barriers, and direct-push hydrofracture systems. He is listed as an expert in the U.S. EPA publication "*In Situ Treatment of Soil and Ground Water Contaminated with Chromium: Technical Resource Guide*" (EPA/625/R-00/005, October 2000). He has recently served as a consultant to the Glasgow, Scotland city council as an advisor in the remediation of extensive deposits of chromium-ore processing residue (COPR) scattered throughout that city. Mr. Rouse also served as an advisor to a major industrial client on remediation of COPR under an East Coast residential area.

## ENVIRONMENTAL PROJECT EXPERIENCE

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### 2011 - PRESENT ACUITY ENVIRONMENTAL SOLUTIONS (ACUITYES)

Mr. Rouse is currently a Principal Geohydrologist at AcuityES and directs the development of advanced remedies to address heavy metals in the environment.

Mr. Rouse joined AcuityES to support the assessment, design and implementation of a \$4.5 million remediation project for hexavalent chromium, nickel, antimony and lead at a former hard-chrome plating shop, located in Muncie, IN. This project was completed in the Indiana Voluntary Remediation Program (VRP). The final remedy included on-Site soil mixing technology coupled with hydraulic fracture injection of selected reagents to reduce hazardous characteristics both on and off Site. Remediation objectives for both the soil and the groundwater were achieved in approximately one year.

Mr. Rouse is currently consulting on the development of an innovative use of waste products to create a flow-through cell capable of precipitating dissolved fluoride, rendering the precipitate non-hazardous. Additionally, Mr. Rouse is consulting on the development of an innovative slurry that can be hydraulically injected into an aquifer to precipitate fluoride ions.



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## 1977 - 2010 POLLUTION-CONTROL CONSULTING ACTIVITIES

In 1977, Mr. Rouse started his own firm (Envirologic Systems, Inc) and began a history of consulting service to industry, especially the gold and uranium mining industry. This continued through several consulting firms including Kleinfelder Associates, GEOCHEM, Groundwater Technology, Fluor Daniel GTI, and MWH. Clients included Homestake Mining Co (Lead, SD), Newmont Mining Co (Elko NV), Cotter Corp (Canon City, CO) and numerous others. This work centered on remediation of existing contamination and permitting of new activities. During this time, he developed the technology for *in-situ* reduction of uranium, which was subsequently transferred to *in-situ* reduction of hexavalent chromium, and a history of more than 25 years service to the wood-treating industry, remediating hexavalent chromium sites across the US and in Australia. Some of the projects include:

- Central Arizona Association of Governments, Globe-Miami AZ- This 3-year study of the impacts of past and present copper-mining activities was jointly funded by EPA and the active copper mining companies in the Pinto and Pinal Creek basins of eastern Arizona. It involved sampling more than 50 existing wells and drilling more than 50 new monitoring wells, as well as sampling surface-water features. The efforts formed a basis of remediation of acidic contamination of ground and surface water.
- Universal Forest Products, Granger, IN- This hexavalent chromium contamination site was remediated by use of *in-situ* reduction, under a voluntary remediation effort supervised by the state of Indiana, and included 4 separate contamination plumes. The first was remediated in 6 weeks, after more than a decade of prior 'pump & treat' efforts.
- Permitting of uranium mills at Ranger, Northern Terr Aust.; Uravan, CO; Cluff Lake, Sask; Danville, VA; and service to regulatory bodies in Australia, Canada, and the US.
- Valley Wood Preserving, Turlock, CA- This mile-long hexavalent chromium plume (a CERCLA site) had been the subject of more than a decade of 'pump & treat' efforts before Mr. Rouse introduced the concept of *in-situ* reduction, and remediated the plume in approximately 3 years.
- Carter Holt Harvey, Mt Gambier, So Aust.- This chromated copper arsenate (CCA) wood treating site is located over a cavernous coralline limestone, approximately 1 km up-gradient of a water supply for a city of 25,000 people, and a major tourist facility (Blue Lake). The site had previously utilized 'pump & treat' efforts for more than a decade, but was remediated in 2 years by means of geochemical reduction.
- Chrome-Ore Processing Residue (COPR) sites- Mr. Rouse has consulted on COPR sites in Baltimore, MD; Corpus Christi, TX; Jersey City NJ, and served as overview consultant to the Glasgow (Scotland) City Council.
- Hanford Nuclear Reservation, WA- Mr. Rouse was requested to assist the DOE in identifying the reason for failure of an extensive reactive-barrier system designed to remediate hexavalent chromium and uranium contamination of ground water discharging to the Columbia River. He subsequently designed a field remedial effort involving active geochemical remediation at the site.
- Whitewood Creek, SD- This CERCLA site involved more than 17,000,000 tons of arsenic-bearing tailings scattered along 18 miles of stream in western So. Dakota. Mr. Rouse, working with Dr John Cherry and Dr. Francois Morrell, provided geochemical data to cause the EPA to issue a Record of Decision that essentially allowed natural geochemical remediation of the site.



## 1961 - 1977 FEDERAL POLLUTION-CONTROL AGENCIES

Mr. Rouse was with the various Federal pollution-control agencies, starting with the U.S. Public Health Service, the Federal Water Pollution Control Administration, the Federal Water Quality Administration, and finally the Environmental Protection Agency. During this time he was:

- In charge of the field study of the salinity in the Colorado River Basin, including the effects of uranium and base-metal sulfide mines and mills,
- Responsible for the monitoring of the at-sea incineration of approximately 90,000 barrels of Agent Orange remaining in storage on Johnson Island,
- The coordinator of nation-wide mercury sampling of streams, lakes and industrial effluents following the initial concern over mercury contamination, serving as interface between the EPA and US Geological Survey laboratories conducting the analytical programs, and
- The 'Mining and Milling Waste Specialist' for the EPA National Enforcement Investigation Center, where he directed studies of such sites as the Grants Mineral Belt, NM; Bunker Hill, ID; Silver Bow Creek, MT, Whitewood Creek, SD; and Phosphate Fertilizer radionuclide emissions. This latter effort involved being responsible for a nation-wide survey of the partitioning of uranium and its radioactive decay products during the mining, beneficiation and distribution of phosphate minerals used in fertilizer production

## INDUSTRY ASSOCIATION SERVICE AND OTHER RECOGNITION

Mr. Rouse is a firm believer in assisting various industry associations. At various times, he has served on or chaired the environmental committees of the Society of Mining Engineers, the American Wood Preserver's Association, the American Association of Port Authorities, and the Western Dredging Association. He is listed as the top technical resource in the EPA Technical Guide on remediation of hexavalent chromium remediation.

## EXPERT-WITNESS TESTIMONY

Mr. Rouse has appeared as an expert in excess of 30 occasions, primarily in the areas of heavy-metal and radiochemical migration in the saturated and vadose zones. In addition to industrial clients, he has served as a consultant to the Cluff Lake (Saskatchewan) Board of Inquiry, the Northern Territory (Australia) Department of Mines and Energy, the U.S. Department of Justice, the U.S. Department of Energy Hanford Technical Assistance Team, and the Colorado Department of Health.

Mr. Rouse has more than 60 published works throughout his career, some the recent recent works addressing Hexavalent Chromium remediation.

## PUBLICATIONS

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