

## ***Prevention and Remediation of Groundwater Contamination***

The State of Wisconsin (through the UWS Water Resources Institute) has supported many research projects emphasizing new technologies for prevention or remediation of groundwater contamination. Final reports and studies in progress provide information or products that will be important for future efforts aimed at controlling or attenuating groundwater contamination in Wisconsin. The findings cover a wide range of technologies (see list of projects at:

<http://dnr.wi.gov/topic/groundwater/documents/GCC/MonitoringResearch/AllProjects.pdf>):

- New and enhanced physicochemical or biological methods to renovate waters contaminated by pesticides and volatile organic carbon compounds (Hickey, 2006-08), (Park and Benson, 2007), (DeVita and Dawson, 2005-06), (Li, 2004-05), (DeVita and Dawson, 2003-04), (Evangelista and Pelayo, 2003), (Collins, 1997-2002), (Li, 2000), (Benson and Eykholt, 2000), (Benson, 1997-2000), (Hoopes, 1997-99), (Park, 1997-98), (Bahr, 1996-98), (Hickey, 1994-96), (Anderson, 1994-95), (Chesters and Harkin, 1991), (Harris and Hickey, 1991-92);
- Enhancements in the ability to control, monitor, and predict the movement of landfill and mine waste contaminants to groundwater (Edil and Benson 2006-07), (Edil, Benson and Connelly, 2004-05), (Edil and Benson, 2000), (Edil 1997), (Benson, 1995-96), (Edil and Park, 1992-93);
- New technologies for the treatment and removal of Arsenic and heavy metals from groundwater. (Li 2009-11), (Metz and Benson, 2007), (Li et. al. 2007), (Shafer et. al. 2005-07), (Benson and Blowes, 2005-06), (Metz, 2006), (Metz & Benson, 2004-06), (Anderson, 2003), (Park, 2002-03), (McGinley, 2002-03);
- Improvements in the predictability of pump-and-treat or excavate-and-treat remediation applications to contaminated aquifers (Evans & Li, 2002-03), (Bahr, 1994-95);
- Innovative agricultural practices designed to reduce groundwater contamination by pesticides and nitrate (Larson, 2011-13), (Thompson 2010-12), (Stelzer and Joachim, 2010), (Miller, 2009), (Bahr and Roden, 2009), (Kraft and Mechenich, 2007), (Kraft and Browne, 2006-07), (DeVita and Dawson, 2001-04), (Norman, 2000-03), (Bundy, 1993-94, 1997-98), (Shinners, 1995-96), (Newenhouse, 1995), (Harrison, 1992-93), (Bahr, 1991-92);
- Development of new technologies for evaluating the integrity of water supply well and exploration borehole seals (Edil, 1998-99), (Edil and Benson, 1997-98), (Edil, 1996);
- Multi-parameter sensors for monitoring groundwater quality and quantity (Bahr and Hart, 2009-10), (Loheide 2007-09), (Krabbenhof et. al, 2007), (Geissinger, 2006-08), (Anderson & Glanchandani, 2002-03); and
- Assessment of emerging biological pathogens and pharmaceutical compounds (Li and McWilliams 2010-12), (Xu 2010-12), (Li & Yang, 2007-09), (McMahon 2005-07), (Sonzogni et al., 2004-06).