



Recently, the Minnesota Department of Agriculture (MDA) became aware of high levels of certain heavy metals in tee boxes and greens of golf courses undergoing conversion to residential use. The MDA believes these high levels of mercury and arsenic are the result of normal, legal use of certain herbicides and fungicides over many years. These products are no longer registered but the MDA is concerned that other golf courses may have similar contamination. We urge golf course owners, managers and potential land developers to conduct assessments and take appropriate measures if contamination exists.

## OVERVIEW

- Soil samples from a Twin Cities west metro golf course show high mercury concentrations that exceed values for residential use as established by the Minnesota Pollution Control Agency.
- Mercury was found in soil below the greens and some tee boxes.
- Elevated concentrations of arsenic and chromium were also detected.
- Former golf course operator used Calo-clor®, a mercury-based fungicide canceled for use in 1994.
- Contaminated soil was removed and safely disposed of at a permitted landfill.

## NATURE of CONCERN

- As other golf course properties are being developed, similar contamination may be found.
- Residential property dwellers may face potential risk if their units are built on land that was developed from a golf course using pesticides with mercury or arsenic.
- Prior use of 'legacy' pesticides containing mercury or arsenic can potentially contaminate soil, groundwater and surface water.

## RECOMMENDATIONS

- Contact the MDA Incident Response Unit for assistance through the Agricultural Voluntary Investigation & Cleanup (AgVIC) program, Pesticide & Fertilizer Management Division, 651/201-6681.
- Consider this an environmental and public health risk that needs to be addressed.
- Hire a consultant experienced in pesticide soil sampling/remediation to conduct further tests. Identify affected areas: greens, tee boxes, mixing, loading and pesticide storage areas.
- Interview former golf course operators to determine pesticide usage.
- Collect water samples at adjacent surface water bodies and shallow groundwater for testing.
- At a minimum, test soil for arsenic, barium, chromium, lead, mercury, selenium, silver and other pesticides applied to the greens and tee boxes.

The MDA is the lead state agency for all aspects of pesticide and fertilizer environmental and regulatory functions. The Pesticide & Fertilizer Management Division (PFMD) works with partnering agencies, the farming community and regulated industry to serve the citizens of Minnesota, strengthen our agricultural economy and to protect the environment. The PFMD Incident Response Unit provides comprehensive site cleanup assistance to parties affected by agricultural chemical contamination.