

ARE WE PART OF THE POLLUTION SOLUTION?

GUIDELINES FOR SILVER AND MERCURY USERS

To protect the water quality in Clear Creek, the wastewater treatment plant must meet rigorous water quality standards before treated water can be discharged back into the Creek. In order to satisfy State and Federal water quality criteria, businesses and industries that discharge wastes into the City of Golden sanitary sewer system must also comply with requirements designed to strictly limit the concentrations of pollutants to the environment.

Many of the pollutants in wastewater cannot be completely removed during the treatment process. Only 75% of the silver and 90% of the mercury is removed during treatment. Silver and mercury not removed in the process will settle in the solids generated during treatment and end up in the landfill or pass through the plant and be discharged to Clear Creek.

Silver accumulates in stream sediments, and in certain forms, can be toxic to fish. Mercury is more detrimental to the environment because it is easily converted to methyl-mercury if ingested by fish or the organisms they feed on. Methyl-mercury levels increase in concentration from one link in the food chain to another.

All precautions must be taken to keep these pollutants out of the sanitary sewer system. In order to maintain continual compliance with State regulations, the City of Golden must continuously monitor wastewater prior to discharge to the treatment plant.

Where does Silver and Mercury waste come from?

The most common source of silver contamination in wastewater comes from improper disposal of spent fixer solutions used in photographic processing of film and development of x-rays.

Mercury based dental amalgams can contain up to 50% mercury along with varying amounts of silver, tin and copper. **Improper disposal of used dental amalgam is a significant source of mercury contamination to a wastewater treatment plant.**

What are Best Management Practices?

The allowable numerical limit for any wastes containing silver and mercury to be discharged to the City of Golden sanitary sewer is near zero. To enforce this limitation, the Environmental Services Division relies on educating businesses about their responsibilities as users of the sanitary sewer system. The following is a list of good housekeeping recommendations or "best management practices" for silver and mercury waste management.

Choices for Managing Silver and Mercury Wastes

Silver Waste Sources	Disposal Concerns	Options
Used Developers	May contain small amounts of silver when recycled or used in automated systems	OK to discharge if not concentrated and not previously recycled
Used Fixers	Contains very high concentrations of silver	Send off-site to a recycler Treat before discharge by permission of City only
Rinse/Process Waters	Contain small to moderate amounts of silver	Send off-site to recycler Treat to remove silver before discharge

Mercury Waste Sources	Disposal Concerns	Options
Amalgam particles collected in traps, screens, separators, or capsules	Contains elemental mercury Cannot be discharged to sanitary sewer Must be treated as a hazardous waste	Use chair side separators and a final mercury amalgam separator before discharge* Collect particles in labeled container for off-site recycling <small>*Recommended as a BMP by ADA.</small>
Bulk Elemental Mercury	Contains elemental mercury Cannot be discharged to sanitary sewer Must be treated as a hazardous waste	Use pre-capsulated amalgam to reduce waste Store empty amalgam capsules in covered container and dispose in trash
Broken Mercury Thermometers	Contain elemental mercury Cannot be discharged to sanitary sewer Must be treated as a hazardous waste	Use mercury clean up kit and store waste in labeled container for off-site recycling Switch to non-mercury thermometers

Other Recommended Good Housekeeping Practices

- Never discharge **concentrated** photo processing or x-ray developing chemicals.
- Always separate mercury wastes and never dispose in the "red bag" or with infectious wastes. Your recycler might refuse pick-up if wastes are unknown.
- Keep a spill cleanup kit in your office. Kits for mercury and hazardous waste spills are available through the City.

Help do your part in protecting the water quality in Clear Creek. If you have questions about handling wastes, contacting recyclers or obtaining spill kits, please call the Environmental Services Division at 303-384-8182 or 303-384-8183 or visit our website at www.cityofgolden.net.