

City of Poway, CA Chooses Integrity Municipal Systems, LLC (IMS) Emergency Chlorine Scrubber for the Lester J. Berglund Water Treatment Plant

The City of Poway, incorporated in 1980, is a small inland city located in Northeast San Diego County in Southern California. The City provides water and wastewater services to a customer base of over 48,000 residents. The City operates and maintains a modern water treatment and distribution system, importing raw water from both the Colorado River and Northern California then treating at the Lester J. Berglund Water Treatment Plant before delivery to all Poway customers.

As part of a water distribution system/treatment plant rehabilitation upgrade project, the City elected to replace the existing emergency chlorine scrubber located at the water treatment plant, specifying a complete and operational system that would be suitable to neutralize a chlorine leak.

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Corey Jennette, Project Manager
NEWest Construction

In order to minimize the risks and consequences of an accidental leak of chlorine gas, the Uniform Fire Code, Article 80, requires that all sites storing cylinders or ton containers must have available to them systems capable of fully containing a release from a leaking cylinder or container. An emergency chlorine scrubber is such a system. An essential part of an effective Risk Management Plan (RMP), the scrubber allows safe evacuation of chlorine-laden air from the chlorination and chlorine storage rooms and neutralization of the chlorine gas prior to discharge to the atmosphere.

Chlorine is commonly added to raw water to make it safe to drink. However, chlorine gas is extremely toxic and presents an immediate danger to life and health (IDLH) at concentrations as low as 10 ppm.

Integrity Municipal Systems, LLC (IMS) was selected to supply the new emergency chlorine scrubber system from among several suppliers by the City of Poway, its consulting engineer (Carollo), and its project contractor (NEWest Construction Company). IMS was chosen for its reliable and proven chlorine scrubber technology, which offers the best overall value measured by performance, capital, installation, maintenance and operating costs.

The IMS EVS-2000 Emergency Chlorine Scrubber is a one-through wet media emergency scrubbing system designed to treat the release of chlorine gas in accordance with the requirements and guidelines of the Uniform Fire Code. The EVS-2000 system is pre-assembled, piped, wired, and factory tested to facilitate installation and start-up at the jobsite. The packaged emergency chlorine scrubber system consists of an FRP absorber vessel with integral caustic sump, recirculation pump, FRP air exhaust fan, and electrical control panel. All of



IMS EVS-2000 Emergency Chlorine Scrubber at Poway, CA

the components of the scrubber system (fan, pump, control panel) are mounted on the low-profile vessel deck in one place for easy operator access and maintenance. The compact and packaged design of the EVS-2000 allowed the system to be anchored to the existing concrete pad from the previous system without modification.

The IMS emergency chlorine scrubber is a three-stage chemical absorption system consisting of a horizontal crossflow spray system followed by two horizontal crossflow packed bed sections. The absorber is placed on top of a caustic storage tank, which is an integral part of the system. An induced draft fan pulls vapors through the scrubber, where intimate contact with a recirculating caustic solution results in the complete absorption and removal of chlorine vapors. A high-efficiency mist eliminator is located in the gas stream, prior to exhaust, to remove any residual caustic solution.

The EVS-2000 is designed to treat a 1-ton release of chlorine (up to 2350 lbs), at a release rate of 78 lbs/min, corresponding to a 30 minute release time as required by the UFC. The air flow rate of 3000 cfm assures a negative pressure in the chlorine room.

The system is normally in a stand-by mode. When a chlorine leak is detected, a signal is sent to start the EVS-2000 exhaust fan, and the chlorine-laden air is immediately evacuated through the chlorine scrubber. The caustic pump is activated first to permit proper wetting of packing in the scrubber stages before starting the exhaust fan, with a 0 to 5 second adjustable time delay. The time delay is typically set for 3 to 5 seconds, a feature that allows the scrubber to be ready prior to passing any chlorine laden gases through it. The treated air passes

through the exhaust fan and is discharged to the atmosphere. For safety reasons, the system continues to operate until manually turned off.

IMS delivered the emergency chlorine scrubber system within the City's expectations in November 2017 and following successful installation of the new system by the contractor after the old scrubber was cleaned, demolished and disposed of, IMS performed commissioning and operator training. The EVS-2000 provided the City of Poway with a reliable, efficient, cost effective and proven chlorine scrubbing technology.

Corey Jennette, Project Manager of NEWest Construction, expressed his appreciation of IMS' support and professionalism: "IMS was an absolute pleasure to work with. I was amazed at how responsive and informative your company was throughout the process of installation. I would also like to add that your staff went above and beyond and helped us very much with the disposal process of the old scrubber unit and handling the chemicals required. You provided the information and support NEWest needed to make the job go as smooth as possible. The scrubber unit itself was received with no issues; all components required were in place and ready with no hold ups. NEWest was able to focus on the installation portion immediately. I personally felt like any issues pertaining to the scrubber unit and the installation were handled expertly. I know our foreman in the field said the same thing when he would contact IMS with any questions or concerns. Overall one of the most responsive and informative companies I have ever worked with. I am really looking forward to any future projects with IMS. Thank you again for the help and support and for helping to facilitate a very successful portion of the Poway WTP project."