

Comments on US EPA Proposed "Revisions to the Underground Injection
Control Regulations for Class V Injection Wells"
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UIC Class V
W-98-05 Comment Clerk
Water Docket (MC-4101)
US Environmental Protection Agency
401 M Street, SW
Washington, D.C. 20460

Gentlemen:

Please find enclosed an original and three copies of comments on the US EPA Proposed "Revisions to the Underground Injection Control Regulations for Class V Injection Wells." I am also submitting these comments in electronic format as a WordPerfect 6/7/8 file.

The US EPA proposes to regulate large cesspools, motor vehicle waste disposal wells and industrial wells to improve groundwater quality protection by either banning such wells or requiring that waste fluids placed in industrial and motor vehicle waste disposal wells meet drinking water standards (MCLs) at the point of injection. On page 40591, middle column, the US EPA states that it wishes to receive comments on its proposed approach of a mandatory compliance with drinking water MCLs at the point of injection. The author of these comments has been concerned about groundwater quality protection from wastes placed in surface soils, landfills, injection wells, lagoons, disposal pits, etc. throughout most of his almost 40-year professional career. He has repeatedly observed situations where various waste management practices lead to groundwater pollution. Because of the importance of groundwaters as a water supply source and the extreme difficulty, if not impossibility, of clean-up of groundwaters once they are polluted by complex mixtures of wastes, it is mandatory that regulatory agencies develop, implement and appropriately monitor regulation implementation for the protection of groundwaters for use by this and future generations.

The current approach used by the US EPA and virtually all states of allowing wastes to be placed in soils, waste disposal areas, including municipal solid waste Subtitle D landfills, waste disposal lagoons, pits and what are classified as injection wells, with limited, often inadequate monitoring until a major groundwater pollution situation has occurred, is strongly contrary to the public's interest. The few dollars saved by inappropriate waste management will ultimately be paid for

many times over by future generations in terms of lost water resources, endangerment of health, welfare and the environment. The current approach of discharging wastes into groundwater systems until problems are found must be changed so that the burden of proof for the discharge of wastewaters and other wastes to soils and in waste management units is shifted to the discharger who wishes to use cheaper than what could readily be real cost waste management practices, such as a Class V injection well. The US EPA's proposed regulations of a small group of Class V injection wells that are large cesspools, motor vehicle waste disposal wells and industrial injection wells where any injection of constituents must meet drinking water MCLs prior to injection is a needed step in the right direction toward improving groundwater quality protection.

It should be understood that the US EPA's proposed approach of requiring compliance with drinking water MCLs prior to injection is not necessarily protective. The US EPA has developed drinking water MCLs for only a limited number of chemicals compared to the vast arena of chemicals that could be present in the three types of Class V injection wells proposed for regulation. For example, MTBE has been found to be a significant component of gasoline which can readily pollute groundwaters, impairing their use for domestic water supplies. At this time, there are no drinking water MCLs for MTBE. MTBE is an example of the vast array of thousands of chemicals that are currently being placed in injection wells and other waste management units that can ultimately cause significant groundwater pollution. The focus on drinking water MCLs is too narrow to be protective of public health and groundwater resources.

In connection with the Ground Water Protection Council's 98 Annual Forum conference that was held September 21-23, 1998 in Sacramento, CA, Mr. Scott Taylor, Dr. Anne Jones-Lee and I developed a review paper on the approach that should be adopted associated with the use of urban area and highway stormwater infiltration BMPs as a BMP for controlling the potential impacts of chemical constituents and pathogenic organisms in urban area and highway stormwater runoff. These infiltration BMPs are part of the Class V injection well arena being considered by the US EPA for increased regulation. This paper discusses the potential problems associated with urban area and highway stormwater runoff water quality impacts and provides guidance on the use of a plausible worst-case scenario approach for evaluating where pretreatment of the stormwater runoff is needed to protect groundwater quality as part of stormwater infiltration into groundwater systems. While the paper focuses on urban area and highway stormwater runoff-associated constituents that are threats to groundwater quality, it has applicability to the review of any Class V injection wells with respect to determining the potential for groundwater pollution by the injectate-associated constituents. This paper is available from my web site (<http://www.gfredlee.com>). The adoption of the proposed approach of conducting a plausible, worst-case scenario evaluation for pollution of groundwaters associated with injecting wastes into groundwater systems set forth in this paper for all Class V injection wells would significantly improve groundwater quality protection from waste-derived constituents.

It is recommended that the US EPA as part of promulgating the Class V injection well regulations for motor vehicle waste disposal wells, large cesspools and industrial wells include the option of the proposed discharger conducting a site-specific, plausible worst-case scenario evaluation of the potential for constituents in the wastes that are proposed to be injected to cause

groundwater pollution - impaired use. While the author agrees with the US EPA that it will be rare that untreated wastes associated with large cesspools, industrial stormwater injection wells or motor vehicle waste disposal wells can be injected into groundwater systems without the significant potential for groundwater pollution, the option should be available for a proposed discharger to demonstrate on a site-specific basis that the particular soil aquifer system that would receive the wastes from these three types of Class V injection wells can be safely injected without leading to groundwater pollution.

The proposed injection well user should have to bear the full cost of conducting the site-specific investigation as well as the cost for regulatory agency review at the local and state levels as well as by the US EPA. This alternative approach to that of having to meet drinking water MCLs in the injected waters would eliminate the unnecessary over-regulation of those few situations where wastes from the three types of Class V wells covered in the July 29, 1998 proposed regulations would occur. It also would broaden the scope of the protection to consider not only those constituents for which there are drinking water MCLs, but other constituents which while not regulated as a drinking water MCL could be a threat to groundwater quality. This approach, therefore would be more protective than the Agency's proposed approach in that the plausible worst-case scenario evaluation should consider all constituents, including those that are not now regulated as potential threats to groundwater quality.

Any permitting of waste disposal wells must also include consideration of potential transformation of waste-associated constituents from non-hazardous constituents at the point of injection to hazardous constituents within the aquifer. An example of this type of situation is organic nitrogen and ammonia which in an aerobic aquifer system will be converted to nitrate. A waste disposal well could meet the nitrate standard (MCL) at the point of injection, yet contain sufficient ammonia for which there is no MCL to cause pollution of the groundwaters by nitrate that is derived from the ammonia injected into the well.

In addition to considering chemical constituents, the worst-case scenario evaluation would also consider viruses and other pathogens that may be in the injected wastes.

One of the areas of additional concern is that the current proposed regulation focuses only on source water quality protection areas. These regulations should be broadened to include restrictions of disposal of automotive service waste fluids, industrial wastewaters and large cesspools in all areas that are underlain by groundwaters that are or could at any time in the future be used for domestic water supply. While at this time I do not know if the US EPA has a definition of waters that should be protected as potential domestic water supplies with respect to the total salt content of the water, if it does not, then I suggest that the state of California value of 3,000 mg/L TDS be used as a definition of a groundwater that could be used for domestic water supply. It would be important that if someone wishes to construct and operate an industrial or motor vehicle waste disposal well overlying a brackish or saline water aquifer system, the proposed user of such a system must demonstrate that the injection of these types of wastes into the system would not lead to pollution of other groundwaters by the waste-derived constituents.

With respect to the issue of the number of people that constitutes waste disposal in a large cesspool, I suggest that 25 individuals be used, rather than 20 individuals. I believe this is more in accord with small drinking water systems.

Overall Conclusions and Recommendations

There is need for the US EPA to implement a Class V injection well program that will better protect groundwater resources than is being accomplished today. A plausible worst-case scenario approach should be used to evaluate the potential for groundwater pollution by all Class V injection wells. In accord with the current regulatory activities, the Agency's proposed approach for restricting the use of large cesspools, motor vehicle waste disposal and industrial injection wells is appropriate. In addition to considering the potential for drinking water constituents for which there are MCLs, any injection of these and, for that matter, other types of wastes into groundwater systems should require a comprehensive pre-injection evaluation of the potential for the waste components, both regulated and unregulated, to cause groundwater pollution. The scope of the proposed regulations should be broadened to all groundwaters that are or could be used for domestic water supply purposes.

Qualifications

Dr. G. Fred Lee is president of G. Fred Lee & Associates, a specialty environmental consulting firm located in El Macero, California. Dr. Lee holds a PhD degree from Harvard University in environmental engineering and environmental sciences and a Master of Science in Public Health degree from the University of North Carolina. He obtained a bachelor's degree from San Jose State University. For 30 years Dr. Lee held university graduate-level teaching and research positions at the Universities of Wisconsin and Texas and at Colorado State University. He retired as a Distinguished Professor of Civil and Environmental Engineering in 1989.

Dr. Lee has conducted over \$5 million in research on various aspects of water quality and solid and hazardous waste management. He has published more than 800 papers and reports on his work. This research has included the evaluation of the potential of landfills and other waste management units to pollute groundwaters, impairing their use for domestic or other purposes.

He has served as an advisor to numerous governmental agencies, public groups and industries in the US and other countries on water quality and solid and hazardous waste management issues. Dr. Lee is a registered Professional Engineer in Texas and a Diplomate in the American Academy of Environmental Engineers.

He has presented short-courses on landfills and groundwater quality protection sponsored by the American Society of Civil Engineers, National Ground Water Association, American Water Resources Association, and the University Extensions of the University of California at Davis, Berkeley, Los Angeles, Santa Barbara and Riverside.

Further information on Dr. Lee's experience and expertise in evaluating and managing the impact of landfills is available at <http://members.aol.com/gfredlee/gfl.htm>. This web site also contains a listing of his recent papers and reports on landfill matters, where many are available as

downloadable files. Also available at this site is additional information on his qualifications to provide these comments.

Sincerely yours,

G. Fred Lee

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