Containment Zone Policy

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Walt Pettit
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Dear Walt:

I am contacting you in connection with my long standing interest in the State Board and the Regional Board adopting and fully implementing policy that will protect future generations' groundwater resources from impaired use. At this time, there is considerable discussion in the hazardous chemical site management field about the Board's containment zone policy and natural attenuation of groundwater pollution plumes. There are some advocating this policy represents a relaxation of groundwater quality protection. I am concerned that the approaches that the State and Regional Boards adopt in connection with implementing this policy be fully protective of this and future generations' groundwater resources from pollution of groundwaters for as long as the constituents of concern are a threat. As I understand it, the approach for implementing this policy is still being developed based on a Cal EPA Report which contained a notice of a "Containment Zone Review Committee Schedules Workshop." While the notice of the workshop was not published in the Cal EPA Report until after the workshop was held, I want to re-iterate my position on the containment zone issues to try to ensure that any implementation approach for the Board's Containment Zone Policy should not allow a PRP for an area that is judged to be "stable" with respect to the groundwater pollution to "close" the site without further monitoring. I raise this issue since the State Board staff at a GRA meeting made the comment in response to a question I asked that once a containment zone is established, the site can be closed from a PRP's perspective and no further monitoring would be required. Every containment zone must be monitored as long as there is any potential threat for groundwater impacts by the residual constituents left at the site. Further, since this monitoring will likely have to take place for an infinite period of time, the PRPs should be required to develop a dedicated trust fund of sufficient magnitude to ensure the monitoring funds needed in perpetuity will in fact be available.

There is considerable discussion in the literature about so-called natural attenuation, which is part of the containment zone issue. While, based on my over-25 years of work on characterizing groundwater plumes associated with various types of sources, there is no doubt that natural attenuation is an important phenomenon that does lead to limiting the size of groundwater pollution plumes. However, defining the extent and degree of natural attenuation represents a substantial effort that goes considerably beyond the quantity and quality of typical studies that are conducted on polluted groundwater sites.

One of the key issues that must be addressed in implementing the Containment Zone Policy is the ability to reliably characterize the hydrogeology of the containment zone area. Based on my experience, having worked on may different groundwater pollution plumes, it is rare that adequate information is available from the conventional type studies being done today on characterization of the hydrogeology of a groundwater pollution situation that a containment zone can be established with a high degree of certainty without significant additional hydrogeological work.

I have recently been involved in a number of attempts to model contaminant transport in the vadose zone and saturated parts of an aquifer. I am continuing to find that much of the modeling done is superficial and, at best, can be characterized as computer game playing. This modeling should not simply be curve fitting to existing data, where there is an attempt to extrapolate beyond the current data to other areas or future situations. The typical models that are used today have limited reliability in predicting concentrations of constituents, their transport and transformations. Any modeling that is used for containment zone definition must include appropriate verification. Without such verification, the models will almost certainly, if the site is properly monitored, be subsequently shown to be in error.

I have previously provided the Board with detailed comments on the inadequate approaches that were used in the Lawrence Livermore study which served as a basis for the Containment Zone Policy where those responsible at Lawrence Livermore and the State Board staff responsible for overseeing this work allowed Lawrence Livermore to only consider a few of the constituents that are present in petroleum hydrocarbons, such as gasoline plumes, in evaluating the fate and impact of constituents in a proposed containment zone. The implementation of the Containment Zone Policy must include consideration of all constituents and their transformation products that have a potential to be adverse to public health, groundwater resources and the environment. This consideration must extend for as long as the constituents in the containment zone area represent a potential threat. It should be understood that unless it can be convincingly demonstrated otherwise this period of time is effectively infinite and that under situations where there are uncharacterized chemicals in a groundwater pollution plume, it should be assumed that they could contain hazardous and deleterious chemicals. Further, any containment zone must be on a PRP's property. No containment zone should be allowed to be established under adjacent properties.

Any relief from infinite protection of groundwater resources must be implemented in such a way as to require that the PRPs provide the necessary funds in a dedicated trust to

ensure that funds will be available for as long as the wastes represent a threat, i.e. effectively forever, to monitor and, if necessary, to pump and treat the containment zone associated constituents to stop the spread of the constituents in this zone that represent public health and use impairment of groundwater resources, in the broadest sense, for domestic or others purposes.

Failure to follow these approaches will result in more groundwater pollution by hazardous and deleterious constituents that will affect future generations' groundwater resources. It is my understanding that this was the previous State Board policy. I would hope that the current Board would reaffirm this policy.

I would appreciate being placed on the mailing list to receive announcements of any meetings, workshops, etc. on containment zone/natural attenuation policy development and implementation.

If there are questions on these comments, please call.

Sincerely yours,

Fred

G. Fred Lee, PhD, DEE

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References as:"Lee, G.F., 'Containment Zone Policy,' Letter to W. Pettit, CA Water Resources Control Board, Sacramento, CA, June (1997) "