

Report on August 31, 2005 LEHR Superfund RPM Meeting

September 1, 2005

Julie Roth, Executive Director
DSCSOC

Julie,

There were problems with the conference call arrangement at the recent RPM meeting. On several occasions during the meeting I tried to ask a question on an issue. However the meeting continued without recognizing that I was trying to ask a question. It appears that the volume of the speaker phone at the meeting was set sufficiently low so that my attempts to ask a question were not heard. Presented below is information on several issues on which I tried to ask a question and/or that I feel need to be brought to the attention of DSCSOC.

DOE Transition Projected Funding

At this RPM meeting, DOE presented information on the budget for future activities at LEHR. An issue that was brought out during the discussion of the budget was that DOE is only budgeting for 30 years of post ROD monitoring. As I have pointed out on several occasions, the residual wastes at the LEHR site will continue to be a threat to public health and the environment effectively forever with the result there will be need for monitoring until the residual wastes at the LEHR are no longer a threat.

As I understand the situation the 30 year period is the minimum period for post ROD monitoring. It evolved out of an error that federal congress made in developing RCRA where congress did not understand, that at many situations, the residual wastes left at a site after remediation will be a threat effectively forever. As I have mentioned, as part of developing the ROD for the LEHR site, there will be need to establish well defined procedures where DOE/UCD will be committed to monitoring the LEHR site for as long as the residual wastes at the LEHR site have the potential to be adverse to public health and the environment.

UCD Disposal of LEHR site Superfund Wastewaters in the Campus Sewerage System

At the July RPM meeting, where I learned that UCD had started dumping surplus LEHR site IRA wastewaters in the UCD campus sewerage system, I raised concern about this situation. As I pointed out, this approach introduces into the sewerage system and the treatment plant, LEHR site wastes that could fail to be adequately treated and thereby introduced into Putah Creek. UCD's presentation of this issue at the August 31, 2005 RPM meeting acknowledged that it was appropriate to raise this issue but presented misleading information on my position on this issue. The UCD statement claiming that I claimed that discharging of LEHR site wastewaters in the campus sewerage system was "significant" and then linked this significant to the UCD NPDES campus sewage plant discharge permit is inappropriate. My use of the term significant was not in any way related to the UCD NPDES permit conditions. As I stated at July RPM meeting and in my followup discussion of this issue, that DSCSOC distributed to the RPMs, UCD's discharge of LEHR wastewaters is of concern since it could introduce a new suite of hazardous chemicals into the campus sewerage system that could pass through the campus sewage treatment plant into Putah Creek and be adverse to Putah Creek water quality.

One of the issues of concern at the July and again in August 31, 2005 RPM meetings were the statements made by UCD and others that the monitoring of the UCD sewage plant discharges is adequate to protect Putah Creek. Those who understand the adequacy of domestic wastewater treatment plant effluents and ambient water monitoring know that the required monitoring as part of the NPDES permit requirements is far from adequate to insure that pollutants in the treated wastewaters are not adverse to receiving water quality for the wastewater discharge. This is the same issue that I have repeatedly raised on the adequacy of the LEHR site PRPs/RPMs in defining the potential constituents of concern and constituents of concern. While the deficiencies in Superfund site designation of constituents of concern and monitoring of wastewaters from domestic wastewaters and many other sources has been recognized for over 20 years, little has been done by the US EPA and state regulatory agencies at the operating level to address this problem. Several years ago we published a peer reviewed paper,

Lee, G. F. and Jones-Lee, A., "Does Meeting Cleanup Standards Mean Protection of Public Health and the Environment?," In: Superfund XV Conference Proceedings, Hazardous Materials Control Resources Institute, Rockville, MD, pp. 531-540 (1994).
<http://www.gfredlee.com/hmcrstd.htm>

which discusses that meeting all cleanup standards for water and soils does not mean that there are no further threats to public health and the environment at Superfund sites. This is especially of concern for those sites that have received complex mixtures of wastes such as the LEHR site. The basic problem is that the approach allowed by regulatory agencies to identify potential pollutants is seriously deficient compared to the arena of possible pollutants at many Superfund sites. This issue was discussed in Stormwater Runoff Water Quality Newsletter NL 7-3 March 2004 which is available at

<http://www.gfredlee.com/newsindex.htm>. That Newsletter was devoted to "unrecognized pollutants. The recent issue of this Newsletter (NL 8-5) indicates that the discussion of unrecognized pollutants has been published by John Wiley in the Water Encyclopedia (2005). This Newsletter also presented a discussion of the US EPA 2.5 day national workshop on Pharmaceuticals in the Environment that was held in Las Vegas, NV August 23-25, 2005.

Based on the presentations made at this workshop, it has been well established that domestic and some other wastewaters and stormwater runoff from urban and some agricultural areas contain pharmaceuticals and other chemicals at concentrations that are a potential threat to domestic water supply water quality and surface water and groundwater quality. The sources of these chemicals include domestic wastewater excretion by individuals taking the pharmaceuticals and individuals discarding pharmaceuticals in their wastewaters, confined animal feeding operations, dairies, landfill leachate (through leakage from the landfill and leachate management at POTWs), stormwater runoff from urban areas and agricultural areas where sewage sludge (biosolids) and animal manure are managed, where the animals and/or animal feed has been treated with pharmaceuticals. Several papers presented at the workshop provided information on the concentrations of various pharmaceuticals found from various sources and on the fate/persistence of the pharmaceuticals in wastewater collection and treatment and in ambient waters.

There is increasing evidence that some fish taken from near domestic wastewater discharges/outfalls experience feminization of male fish. Further, there is concern about the finding that acute/chronic toxicity ratios for aquatic life for some pharmaceuticals are on the order of 50,000 to 150,000. Typically, for the currently regulated pollutants, the ratio of the acute toxicity concentration to the chronic safe concentration is on the order of 10 to 100. It is not surprising to find such large acute/chronic ratios since, in general, pharmaceuticals are developed to have biological effects (in man and/or animals) at low concentrations without causing toxicity to the treated organism. There is too little data on the chronic toxicity of many pharmaceuticals to aquatic life to know how common very high acute/chronic toxicity ratios are.

There is also concern that some pharmaceuticals, while not toxic in the classical sense, cause behavioral changes in some aquatic life that would in the long term affect aquatic life populations in the area where the pharmaceuticals are found. It would not be surprising, based on the presentations made at the workshop, to find that UCD campus wastewater plant's discharge to Putah Creek is causing fish in Putah Creek near the effluent discharge are being impacted by pharmaceuticals and other chemicals in the effluent. This impact could be causing male fish to take on female fish characteristics. Pharmaceuticals in various types of wastes are just one example of the vast arena of unrecognized, unmonitored and unregulated chemicals that are not considered in today's NPDES water quality characterization/regulation.

The PowerPoint presentation at the workshop by Dr. Christian Daughton, Chief of the Environmental Chemistry Branch, National Exposure Research Laboratory, Office of Research and Development, US EPA, Las Vegas, Nevada, "Overview of Science Involved with Pharmaceuticals," is available from gfredlee@aol.com upon request. In this presentation he discussed the inadequacy of identifying constituents of concern and monitoring wastewaters for the range of pollutants that could be impacting public health and the environment. In his presentation he stated,

"Further Truisms Regarding Environmental Monitoring

- *What one finds usually depends on what one aims to search for.*
- *Only those compounds targeted for monitoring have the potential for being identified and quantified.*
- *Those compounds not targeted will elude detection.*
- *The spectrum of pollutants identified in a sample represent but a portion of those present and are of unknown overall risk significance."*

He presented a diagram of this situation which is presented in the attached figure. As indicated only a small part of the chemicals that can be present in a domestic wastewater and at a Superfund site that could be constituents of concern are identified/monitored under the current regulatory approach. As discussed in previous DSCSOC comments on the adequacy of the LEHR Superfund site investigation, there can readily be chemicals in the LEHR site wastes, soils, surface water runoff and groundwater that are not being considered as constituents of potential concern yet are a threat to public health and the environment..

In summary, statements made at the August 31, 2005 RPM meeting that the UCD domestic wastewaters that are discharge to Putah Creek are adequately monitored to detect potential impacts of wastewater derived constituents including the addition of LEHR site wastewaters to the campus sewerage system reflects a lack of understanding/reliable reporting on the large

number of unregulated/unmeasured chemical constituents that can have an adverse impact on Putah Creek water quality. Analytical methods and biological testing procedures have been available for several years that, if used, could significantly improve the identification of constituents of concern. These methods are not used since their use would increase the cost of Superfund and wastewater characterization for the PRPs and the US EPA.

Impact of Salt in UCDs Wastewater Discharges

At the meeting UCD representatives informed the RPMs that UCD has been violating its campus wastewater NPDES permit discharge limit for salt as measured as TDS/EC. In response to a question by an RPM on the importance of UCD's salt discharges on water quality, I pointed out that salt in UCDs wastewaters contributes to the excessive salt concentrations in the Delta that are of concern to 23 million people in CA that use Delta water as a source of water supply. Salt concentrations in discharges to the Delta and its tributaries above about 400 $\mu\text{mhos/cm}$ adds to the salt load to the Delta that is of concern to water utilities that use Delta water as a water supply. As discussed by,

Lee, G. F. and Jones-Lee, A., "Overview of Sacramento-San Joaquin River Delta Water Quality Issues," Report of G. Fred Lee & Associates, El Macero, CA, June (2004).

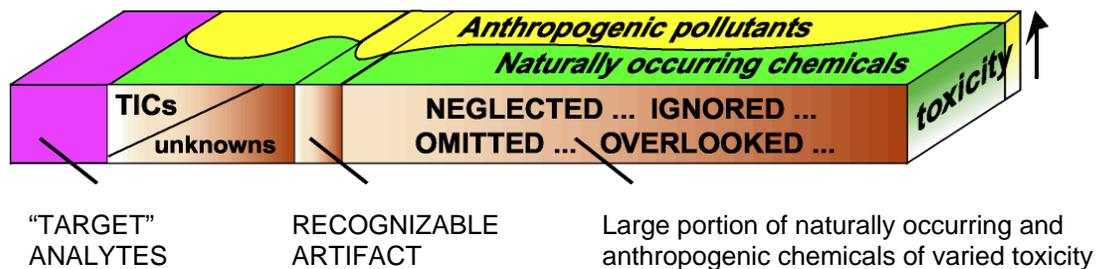
<http://www.members.aol.com/apple27298/Delta-WQ-IssuesRpt.pdf>

elevated salts in the domestic water supply source waters inhibits the recharge of the wastewaters to an aquifer for reuse since it will violate groundwater recharge limits for salts. The statements at the RPM meeting that UCD's LEHR site wastewaters that are being discharged in to the campus sewerage system will not contribute to the excessive salt problem is incorrect in that the salts concentrations in this wastewater will contribute to the salt load to the Delta that contributes to water quality problems in using the Delta water for domestic water supply. In addition to salt concentrations in the effluent relative to NPDES permit limitations, there is concern about the salt load to the Delta. At this time the CVRWQCB is not adequately regulating salt discharges to the Delta and its tributaries in NPDES permits to protect the use of Delta water for domestic water supply purposes.

If there are questions on these comments please contact me.

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Chemical Analysis Output for a Typical Environmental Sample



TICs = tentatively identified compounds

from: C.G. Daughton, US EPA (July 2002)

This figure is cited from the following web page: "The Critical Role of Analytical Chemistry,"
C.G. Daughton, July 2002

<http://www.epa.gov/nerlesd1/chemistry/pharma/critical.htm>