

G. Fred Lee & Associates

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December 11, 2009

Solid Waste and Emergency Response Discussion Forum OSWER Discussion Forum,

Response to invitation to discussion: *“In order to enhance the dialogue between EPA and the public, this online forum provides an opportunity for private citizens, environmental groups, businesses, community groups, and local and tribal governments to discuss topics relating to EPA’s Office of Solid Waste and Emergency Response. OSWER will post a new discussion topic monthly.*

Each question below leads to a conversation on that topic. Click on a link to read or participate in a conversation. We encourage you to comment; knowing your thoughts and ideas helps us shape better environmental policy

How can EPA better engage and prepare local communities, especially economically disadvantaged communities, to meaningfully participate in government decisions on land cleanup, emergency response, and the management of hazardous materials and waste?

I wish to submit the following comments on how to improve solid waste management to more adequately and reliably protect public health, the quality of groundwater and surface water, and the interests of those impacted by solid waste management facilities.

I have been involved in evaluating identified and potential impacts of municipal solid waste (MSW) and hazardous waste landfills since the mid-1960s, as a university teacher/researcher and as a consultant to public water utilities, the public, and private interests concerned about the impacts of existing and proposed landfills. I have attached a summary of my recent activities in these areas. I have been involved in the review of more than 80 landfills across the US and in several other countries, and have published more than 100 papers/reports on my university research on landfill liners and reviews on the impacts of existing and proposed landfills. Those papers/reports are available on Dr. Anne Jones-Lee and my website, www.gfredlee.com, in the Landfill-Groundwater section. Our writings include a comprehensive review that discusses fundamental flaws in the landfilling approach that was adopted in the early 1990s in the US EPA Subtitle D landfilling regulations:

Lee, G. F., and Jones-Lee, A., “Flawed Technology of Subtitle D Landfilling of Municipal Solid Waste,” Report of G. Fred Lee & Associates, El Macero, CA, December (2004). Updated September (2009).

<http://www.gfredlee.com/Landfills/SubtitleDFlawedTechnPap.pdf>.

As discussed in that “Flawed Technology” review, the Subtitle D regulations only postpone the occurrence of groundwater pollution by today’s landfills. They fail to put forth provisions that

protect the public from releases from landfills for as long as the wastes pose a threat, which, in turn, justifies a “NIMBY” response to landfills by the public. The above-cited review also addresses provisions that need to be made in regulating the management/landfilling of non-recyclable MSW, industrial hazardous wastes, and so-called “non-hazardous” wastes to ensure greater and more reliable protection of public health, groundwater and surface water quality, and the interests of those in the sphere of influence of the landfill. I have repeatedly observed the imposition of landfills on the public, under the current US EPA and state landfilling regulations, that will be significantly adverse to those living or working in the area of the landfill. Our writings discuss many aspects of the unreliability of information that has been put forth by the recent US EPA Bush administration touting the protective nature of today’s landfills.

If there is interest I am willing to donate my time to serve as an advisor to the US EPA in its OSWER Forum to assist in addressing existing problems with current landfilling regulations. I would, however, need travel support to participate in meetings on these issues. Additional information on my expertise and experience is available on our website; that information can be accessed by clicking on “About G. Fred Lee & Associates” at the bottom of the homepage, or directly at <http://www.gfredlee.com/gflinfo.htm>.

I could also be of assistance to the US EPA in addressing significant problems in Superfund (hazardous chemical) site investigation/remediation. I have been an advisor to public agencies and groups to evaluate and improve the investigation and remediation of hazardous chemical sites, since the early 1980s. I have served, and continue to serve, as a US EPA-supported TAG (technical assistance grant) advisor to the public at various NPL and state superfund sites. A summary of that experience is available on our website in the “Hazardous Chemical Sites” section at <http://www.gfredlee.com/phazchem2.htm>. Also posted in that section of our website are several papers that address improvements needed in Superfund site investigations for the protection of public health and environmental quality. Of particular concern in this regard is the inadequacy of investigation of the impacts of pollutants in stormwater runoff from hazardous chemical sites on receiving water quality. The US EPA needs to provide detailed guidance on how to properly monitor pollutants in stormwater runoff from hazardous chemical sites.

Please add me to the email list to receive announcements of future Forum activities.

Please contact me if you have questions on our writings on these issues. I wish you the best of success in this initiative.

G. Fred Lee, PhD, PE, AAEE Bd Cert. Environmental Engineer

Supplement to Qualification of G. Fred Lee PhD, PE, BCEE

After earning a PhD degree in Environmental Engineering with emphasis on aquatic chemistry and public health from Harvard University in 1960, Dr. Lee held graduate university faculty positions at several US universities. In that capacity, he taught graduate-level environmental engineering/science courses, conducted research, mentored Masters and PhD students, and was highly involved in public and professional service. During his 30 year teaching and research career he conducted over \$5 million in research into water quality and solid and hazardous waste management issues and published more than 500 papers and reports on his research activities. He supervised the MS and PhD thesis/dissertations for 90 graduate students. During that period he also served as a part-time consultant to governmental agencies, industry, and public groups on water quality issues.

In 1989 Dr. Lee retired from university teaching and research and expanded his part-time consulting into a full-time endeavor through his firm, G. Fred Lee & Associates, for which he and Dr. Anne Jones-Lee, his wife, serve as the principals. G. Fred Lee & Associates is a specialty environmental quality consulting firm focused on issues of water supply water quality, water and wastewater treatment, water pollution control, and solid and hazardous waste impact investigation/management. Dr. Lee has continued to develop professional publications (reports and papers) on the findings of their work and his insights and experience in the field; at this time many of their more than 1,100 publication can be downloaded from their website, www.gfredlee.com.

A brief summary of Dr. Lee's consulting activities over the past five years is presented below, along with citations of publications that Lee and Jones-Lee developed from these activities. Additional information on these activities is available upon request.

Recent and Current Activities and Publications of G. Fred Lee and Anne Jones-Lee 2004/2009

Brief Summary of Activities

- **PV Cancer Cluster Cause**

The Centers for Disease Control (CDC) ATSDR has identified a cluster of Polycythemia Vera (PV) cancer cases and other Myeloproliferative Disorders (MPD) in Schuylkill County, PA. Through a CDC ATSDR-supported project, Drs. Lee and Jones-Lee are conducting an evaluation of the waterborne pathway for pollutants that cause the PV and MPD cases. Particular attention is being given to the role of past hazardous waste disposal in the areas abandoned coal mines as a source of chemicals that could be the cause of the diseases.

- **Potential Impacts of the Proposed Jungo Disposal Site**

A review of the potential impacts to groundwater quality of the proposed Jungo landfill disposal site in Humboldt County, Nevada has been conducted.

- **Review of the PCB Pollution of Upper Fox River Wisconsin**

On behalf of the upper Fox River Wisconsin Group a review has been conducted on the pollution of the Fox River by PCBs during the 1960s-early 1970s.

- **Impact of Electronic Wastes in MSW Landfills**

As followup to comments by the US EPA claiming that electronic wastes deposited in MSW landfills will not lead to groundwater pollution by heavy metals, developed the report,

Lee, G. F., and Jones-Lee, A., "Electronic Wastes and MSW Landfill Pollution of Groundwater," Report of G. Fred Lee & Associates, El Macero, CA, September (2009).
<http://www.gfredlee.com/Landfills/ElectronicWasteCom.pdf>

This report discusses the unreliable information provided by the US EPA on this issue.

- **Waste Management Throchild Landfill**

On behalf of the Concerned Citizens of Thorhild County, Alberta, Canada, evaluated the potential impact of a proposed Waste Management MSW Landfill, developed a report on this findings, and presented testimony at a Thorhild County Council meeting,

Lee, G. F., "Summary of Comments on Waste Management's Thorhild Landfill Re-Zoning Application Binder," PowerPoint Slide Presentation to Thorhild County Council, Alberta, CAN, April 24 (2009).
<http://www.gfredlee.com/Landfills/Thorhild-Powerpoint.pdf>

Lee, G. F., "Comments on Waste Management's Thorhild Landfill Re-Zoning Application Binder Dated February 2009," Report to Concerned Citizens of Thorhild County, Alberta, CAN, submitted by G. Fred Lee & Associates, El Macero, CA, April 24 (2009). <http://www.gfredlee.com/Landfills/CommentsWMThorhildLF.pdf>

He also prepared comments on Alberta Environment's draft revised MSW landfilling regulations as,

Lee, G. F., and Jones-Lee, A., "Comments on Alberta Environment's 'Consultation Draft' of 'Standards for Landfills in Alberta,'" Report of G. Fred Lee & Associates, El Macero, CA, Submitted to Environment Alberta, Edmonton, Alberta, Canada, September (2009). <http://www.gfredlee.com/Landfills/EnvAlbertaDraftLF.pdf>

- **Clinton Landfill**

On behalf of DeWitt County, IL, conducted a review of potential public health impacts associated with accepting PCBs in a TSCA PCB landfill unit in the DeWitt County MSW landfill. A report on this issue was developed as,

Lee, G. F., and Jones-Lee, A., "Evaluation of the Potential for Area Disposal Company Proposed Chemical Waste Unit Landfill to Pollute the County Water Resources with Hazardous Chemicals," Report to County Board, DeWitt Co., IL. Report of G. Fred Lee & Associates, El Macero, CA, May 7, (2009).
http://www.gfredlee.com/Landfills/Clinton_IL_CWU.pdf

- **UCD/DOE LEHR Superfund Site Stormwater Runoff Mercury Issues**

Evaluated the release of mercury from University of California Davis' Department of Energy LEHR Superfund site in stormwater runoff, and Putah Creek mercury water quality issues. Published the paper,

Lee, G. F., and Jones-Lee, A., "LEHR Superfund Stormwater Runoff and Putah Creek Mercury Issues," *Journal Remediation*, **19(2)**:123-134, Spring (2009).
<http://www.gfredlee.com/SJR-Delta/LEHRunoffHgRemediation.pdf>

- **US Gypsum Facility**

Evaluated the adequacy of draft environmental impact statement for proposed USG facility at the Port of Stockton, California. Developed report as,

Lee, G. F., Jones-Lee, A. "Comments on the US Gypsum Draft Environmental Impact Statement for the Development of the US Gypsum Proposed Wallboard Plant to Be Located on Port of Stockton West Complex, submitted to Lozeau / Drury Alameda, California December 2008. <http://www.gfredlee.com/HazChemSites/USGypsumDEIR.pdf>

- **Carleton Farm Landfill,**

Assisted in litigation on release of landfill odor, Detroit, MI

- **Cortina Landfill**

Reviewed potential impacts of proposed Cortina Landfill in Colusa County, CA

- **Turkey Run Landfill**

Testified at administrative hearing in state of Georgia on the permitting of the Turkey Run Landfill in Meriwether County, GA. A report covering this issue is available as,

Lee, G. F., and Jones-Lee, A., "Comments on the Potential for the Turkey Run Landfill to Pollute Groundwater and Surface Waters in Violation of GA EPD Solid Waste Management Rules and Landfill Permit," Report of G. Fred Lee & Associates, El Macero, CA, June 8 (2008).

<http://www.gfredlee.com/Landfills/TurkeyRunLFCom.pdf>

- **Landfill Liner Leak Detection System**

Advised on patent infringement situation on landfill liner leak detection system Dallas, TX.

- **Tulane University Environmental Law Center**

Developed an affidavit for the Federal court on potential impacts of city of New Orleans hurricane "Katrina" construction and demolition wastes in landfills on public health and the environment. Also reviewed the closure of Chef Mentuer C and D Landfill.

- **Campo Landfill**

Reviewed environmental impacts of the Campo Landfill proposed to be located on the Campo Indian Reservation, on behalf of Backcountry Against Dumps. That landfill is a threat to groundwater quality.

- **Sydney, NS, Canada Tar Ponds Remediation**

On behalf of the Sierra Club of Canada conducted a review of the adequacy of Sydney Tar Ponds Agencies' proposed approach for remediation of the Sydney Tar Ponds hazardous chemical site with PCBs and PAHs using cement based solidification/stabilization. The report and PowerPoint slides are available as,

Lee, G. F., "Comments on, 'Remediation of Sydney Tar Ponds and Coke Ovens Sites Environmental Impact Statement, Sydney, Nova Scotia,' dated December 2005," Report of G. Fred Lee & Associates, El Macero, CA, USA, May 15 (2006).

<http://www.gfredlee.com/Landfills/SydneyTarPondsReport.pdf>

Lee, G. F., "Assessment of the Adequacy & Reliability of the STPA Proposed Approach for Remediation of the Sydney Tar Ponds' Sediments," Presentation to the Sydney Tar Ponds and Coke Ovens Sites Remediation Project Joint Review Panel, Sydney, Nova Scotia, CANADA, PowerPoint Slides; G. Fred Lee & Associates, El Macero, CA, May 15 (2006). <http://www.gfredlee.com/Landfills/SydneyTarPondsPowerPt.pdf>

Lee, G. F., "Unreliable/Inadequate Information on the Efficacy of Solidification/Stabilization of Sydney Tar Pond Sediments," Report of G. Fred Lee & Associates, El Macero, CA, February (2007).

<http://www.gfredlee.com/Landfills/SydneyTPSedSolidif.pdf>

Lee, G. F. and Jones-Lee, A., "Progress toward Remediation of the Sydney Tar Ponds: A Major Canadian PCB/PAH 'Superfund' Site," *Journal Remediation* 17(1):111-119 (2006). <http://www.gfredlee.com/Landfills/STP-Remediation-pap.pdf>

Lee, G. F., "Update on the Remediation of the Sydney Tar Ponds: Potential Health Effects of Offsite Odor Problems," Report of G. Fred Lee & Associates, El Macero, California November (2009).

<http://www.gfredlee.com/Landfills/SydneyTarPondsOdors.pdf>

- **Great Valley Center Conference**

Presented a review of San Joaquin River Water Quality Issues.

Lee, G. F., and Jones-Lee, A., "San Joaquin River Water Quality Issues," (PowerPoint Slides) Invited Paper Presented at Great Valley Conference, "At the Tipping Point," Sacramento, CA, Sponsored by Great Valley Center, Modesto, CA, May 11 (2006).

<http://www.gfredlee.com/SJR-Delta/SJR-April2006.pdf>

Lee, G. F., Jones-Lee, A., "San Joaquin River Water Quality Issues," Report of G. Fred Lee & Associates, El Macero, CA, June (2006).

<http://www.gfredlee.com/SJR-Delta/sjr-WQIssues.pdf>

- **Peoria County, IL**

Assisted a citizen group in evaluating the potential impacts of the expansion of a hazardous waste landfill on public health, groundwater resources, and the environment. The report is available as,

Lee, G. F., "Comments on 'Supplemental Peoria County Staff Report for Peoria Disposal Company Application for Local Siting Approval,' dated April 3, 2006," Report of G. Fred Lee & Associates, El Macero, CA, April 4 (2006).

<http://www.gfredlee.com/Landfills/PDC-Supplement.pdf>

Lee, G. F., "Comments on the Potential Impacts of the Peoria Disposal Company Landfill Expansion on Public Health, Groundwater Quality and the Environment," Submitted to Heart of Illinois Sierra Club and Peoria Families Against Toxic Wastes, by G. Fred Lee & Associates, El Macero, CA, March 24 (2006).

<http://www.gfredlee.com/Landfills/PDCRpt-final.pdf>

- **Morrow County, OH**

Assisted a citizen group in evaluating the potential impacts of two proposed construction and demolition waste landfills on public health, groundwater resources and the environment. Provided advice on how to improve public health and environmental protection if the landfills are permitted. The report is available as,

Lee, G. F., "Comments on Deficiencies in the Morrow County Board of Health's 'Additional Terms and Conditions' for Issuing a License to Washington Environmental Ltd. for the Proposed Washington C&DD Landfill," G. Fred Lee & Associates, El Macero, CA, June (2006).

<http://www.gfredlee.com/Landfills/DeficienciesMorrowCoLF.pdf>

Lee, G. F., and Jones-Lee, A., "Improving Public Health and Environmental Protection from Inadequately Developed Landfills," from: Lee, G. F., and Jones-Lee, A., "Flawed

Technology of Subtitle D Landfilling of Municipal Solid Waste," Report of G. Fred Lee & Associates, El Macero, CA, Dec, 2004. updated March 2006. (2006).
<http://www.gfredlee.com/Landfills/ImprovProt-LF.pdf>

- **Kankakee Landfill, Kankakee, IL**

On behalf of a concerned public group, reviewed potential public health, water resource, and environmental impacts of the proposed Kankakee Landfill for as long as the wastes in the proposed landfill will be a threat. That landfill is a minimum-design US EPA Subtitle D landfill with a clay liner on the bottom footprint that provides the potential for an inward gradient of groundwater into the bottom of the landfill. The report is available as,

Lee, G. F., "Review of the Proposed City of Kankakee Regional Landfill's Ability to Provide Public Health and Environmental Protection for as Long as the Wastes in This Landfill Will Be a Threat," Report to POWER (Protecting Our Water, Environment and Rivers), Report of G. Fred Lee & Associates, El Macero, CA, January 24 (2006).
<http://www.gfredlee.com/Landfills/KankakeeLFfinal.pdf>

- **Pottstown Landfill, Pottstown, PA**

Reviewed Pennsylvania Landfilling regulations relative to landfill postclosure care requirements during the period of time that the wastes in the Pottstown Landfill will be a threat to generate leachate; reviewed adequacy of Pottstown Landfill groundwater monitoring well array to detect landfill liner system leakage; reviewed Pottstown Landfill recent data for groundwater monitoring, leachate composition, leak detection zone volumes; reviewed ability of current Pottstown Landfill (old landfill) groundwater pollution and the groundwater extraction system to remediate pollution; prepared report on the expected performance of the Pottstown Landfill containment system components in preventing groundwater pollution by landfilled wastes for as long as the wastes in the landfill will be a threat. The report is available as,

Lee, G. F., "Comments on Waste Management's, 'A Compilation of Expert Reports Provided to the Pottstown Landfill Closure Committee,' Dated June 1, 2005," Letter submitted to Ruth Damsker, Chair, Pottstown Landfill Closure Committee, Pottstown, PA, by G. Fred Lee & Associates, El Macero, CA, June 9 (2005).
<http://www.gfredlee.com/Landfills/WM-Rpt-Com6-9-05.pdf>

Lee, G. F., Jones-Lee, A., "Expected Performance of the Pottstown Landfill Containment and Monitoring Systems," Report to Pottstown Landfill Closure Committee, Pottstown, PA by G. Fred Lee & Associates, El Macero, CA, March (2005).
<http://www.gfredlee.com/Landfills/PottstownLFPerform.pdf>

Lee, G. F., Jones-Lee, A., "Expected Performance of the Pottstown Landfill Containment and Monitoring Systems," PowerPoint slides by G. Fred Lee & Associates, El Macero, CA, presented to Pottstown Landfill Closure Committee, Pottstown, PA, June 1 (2005).
<http://www.gfredlee.com/Landfills/PottstownLF-PowerPt.pdf>

Cole, H. S. and Lee, G. F., "The Pottstown Landfill: Overview - Environmental Evaluation and Recommendations for Closure," Report presented to Pottstown Landfill Closure Committee, Pottstown, PA, June 1 (2005).
http://www.gfredlee.com/Landfills/ColeLeeOverviewFinal_May27.pdf

- **Turkey Run Landfill, GA**
 Testified at trial on the appropriateness of Meriwether County, GA, adopting zoning regulations that restrict the siting of an MSW landfill in the watershed of a small domestic water supply. The report is available as,
 Lee, G. F., “Review of the Justification for Meriwether County, Georgia, to Prohibit MSW Landfills in Water Supply Watershed District,” Report of G. Fred Lee & Associates, El Macero, CA, September 3 (2005).
<http://www.gfredlee.com/Landfills/MeriwetherGA.pdf>
- **Culverton Plantation Landfill, GA**
 Advised Hancock County, GA on the reliability of a landfill applicant’s rezoning application and the potential environmental impacts of the proposed Culverton Plantation Landfill in Hancock County, GA. No report is available.
- **Gentilly Landfill, New Orleans, LA**
 Reviewed potential impacts of disposal of hurricane Katrina debris from the city of New Orleans in the closed, unlined Gentilly Landfill, on public health and the environment. The report is available as,
 Lee, G. F., “Summary of Findings on the Environmental Impacts of the Proposed C&D Landfill on Top of the Closed Gentilly Landfill,” Submitted to Louisiana Department of Environmental Quality, Baton Rouge, LA, February (2006).
<http://www.gfredlee.com/Landfills/FindingsGentilly.pdf>
- **Sunshine Canyon Landfill, CA.**
 Provided comments on Los Angeles County Addendum EIR with respect to the potential of the proposed Los Angeles City/County Landfill to pollute groundwater. The report is available as,
 Lee, G. F., "Comments on the Los Angeles County Addendum to the EIR for the Sunshine Canyon City/County Landfill," Comments submitted to Altshuler, Berzon, Nussbaum, Rubin & Demain, San Francisco, CA, by G. Fred Lee & Associates, El Macero, CA, April 5 (2005).
<http://www.gfredlee.com/Landfills/SunshineLFEIR.pdf>
- **Palos Verdes Landfill, CA**
 Provided comments on Los Angeles County New South Coast County Golf Course EIR with respect to causing increased groundwater pollution. The report is available as,
 Lee, G. F., “Comments on Water Quality Aspects of Draft EIR for the Proposed New South Coast County Golf Course,” Comments Submitted to the Department of Parks and Recreation, County of Los Angeles, by G. Fred Lee & Associates, El Macero, CA, March (2004). <http://www.gfredlee.com/NSCCGCEIR.pdf>
- **Grand Forks Landfill, Turtle River Township, ND**
 Provided comments on EIS for proposed Turtle River Landfill, North Dakota with respect to adequacy of discussion of the threat of the landfill to pollute groundwater and the atmosphere. The report is available as,
 Lee, G. F., and Jones-Lee, A., "Review of the Potential Public Health and Environmental Impacts of the Proposed City of Grand Forks, ND Balefill Landfill Facility in Turtle River Township," Submitted to Turtle River Township Zoning Commission Turtle River Township, ND, December (2004).
<http://www.gfredlee.com/Landfills/CommDEISNDak.pdf>
- **Southpoint Landfill, Mobile, AZ**

Provided comments on potential impacts of proposed Southpoint Landfill on Mobile, AZ. The report is available as,

Lee, G. F., and Jones-Lee, A., "Justification for Opposition by Residents of Mobile, Arizona, to the Siting of an Additional Landfill in Mobile," Comments submitted to H. Shanker, Attorney, Phoenix, AZ, June (2004).
<http://www.gfredlee.com/Landfills/MobileAZ-com6-29-04.pdf>

- **Coventry Landfill, VT**

Provided comments on impact of proposed expansion of Coventry Landfill on water quality of Lake Memphremagog. The report is available as,

Lee, G. F., "Evaluation of the Potential Impacts of the Proposed Expansion of the Casella Waste Management Landfill in Coventry, Vermont," Report Submitted to the Memphremagog Regional Council by G. Fred Lee & Associates, El Macero, CA (2004).
<http://www.gfredlee.com/Landfills/CoventryLF.pdf>

- **Hammond Sanitary District, IN**

Provided comments on the reliability of the NOAA Natural Resources Damage Investigation report of the pollution of Grand Calumet River sediments by the District's stormwater runoff and combined sewer discharges. The report is available as,

Lee, G. F., "Comments on January 13, 2004, Draft Preliminary Problem Formulation Technical Memorandum for the West Branch of the Grand Calumet River, Lake County, Indiana, Prepared by Tetra Tech for the US Fish and Wildlife Service," Comments Submitted to the U.S. Fish and Wildlife Service on behalf of the Sanitary District of Hammond, Indiana, by G. Fred Lee & Associates, El Macero, CA, February (2004).
<http://www.gfredlee.com/Hammond-GCR-Comments.pdf>

- **DeltaKeeper/California Sport Fishing Protection Alliance, Stockton, CA**

Reviewed and prepared comments on regulating aquatic pesticides, NPDES permit toxicity testing, regulating enhanced groundwater recharge, managing contaminated sediments in the Port of Stockton, and on San Joaquin River Deep Water Ship Channel and Delta water quality issues. The reports are available at <http://www.gfredlee.com/psjriv2.htm>

- **CA Sportfishing Protection Alliance**

Testified at SWRCB evidentiary hearing on draft SWRCB Cease and Desist Order requiring USBR and DWR to comply with South Delta salinity standard. The reports are available at <http://www.gfredlee.com/psjriv2.htm>

- **UCD/DOE LEHR National Superfund Site**

US EPA-supported Technical Assistance Grant advisor to the public (Davis South Campus Superfund Oversight Committee) on the adequacy of investigation and remediation of the UCD/DOE LEHR national Superfund site on the University of California Davis campus. This site includes soils, groundwater, and surface water contaminated by radioactive wastes, solvents, heavy metals and nutrients. The reports are available at <http://www.gfredlee.com/dscsoc/doc.htm>

- **Lava Cap Mine Superfund Site**

US EPA-supported Technical Assistance Grant advisor to the public (SYRCL) on the adequacy of the Lava Cap Mine Superfund site investigation and remediation. This site is a former gold mine located near Nevada City, CA. It contains large amounts of mine tailings having elevated levels of arsenic that have polluted surface and groundwaters. The reports are available at <http://www.gfredlee.com/phazchem2.htm#lava>

- **State of Michigan Attorney General and Sierra Club Environmental Legal Program**
Assisted in litigation on restricting recyclable wastes from Michigan landfills. The report is available as,
Lee, G. F., “Justification for the State of Michigan’s Ban on the Deposition of Recyclable MSW Components to Preserve Landfill Space and Reduce Landfill Public Health and Environmental Impacts,” Report of G. Fred Lee & Associates, El Macero, CA, June (2004). <http://www.gfredlee.com/Landfills/MichBanRecyclableWaste.pdf>
- **CA Department of Health Services**
Member of the CA DHS Steering Committee for the Fish Mercury Project. This project is a \$4.5-million research effort devoted to investigating and developing control approaches for excessive mercury bioaccumulation in Central Valley, CA fish.
- **Central Valley Regional Water Quality Control Board**
Member of the Technical Issues Committee for the Ag Waiver Irrigated Lands Program.
Member of the CVRWQCB Unknown Caused Toxicity Committee.
Participant in the Delta Mercury Tributary Council.
Participant in the Sacramento River Watershed Program.
Commented on proposed TMDL for excessive fertilization of Clear Lake, CA.
- **California State Water Resources Control Board**
Participant in the SWRCB Sediment Quality Objectives development program. Comments are available at <http://www.gfredlee.com/psedqual2.htm>.

Participant in Coastal Nutrient Water Quality Objective Committee
- **Service on Journal Editorial Boards**
Member of the editorial boards for the journal *Remediation* and the journal *Stormwater*.
- **California Environmental and Water Quality Modeling Forum**
Member steering committee for the Modeling Forum.
- **Standard Methods Committee**
Member of the review panel for the American Public Health Association, American Water Works Association, and Water Environment Federation manual, *Standard Methods for the Examination of Water and Wastewater*.
- **Peer Review Activities**
A frequent peer-reviewer of research proposals, journal articles, and research project proposals and reports.
- **Stormwater Runoff Science/Engineering Newsletter**
Developed and publishes the email-based, Stormwater Runoff Science/Engineering Newsletter. Now in its twelfth year of publication, this newsletter discusses and provides technical insight and information on timely topics pertinent to evaluation and management of stormwater runoff. It is emailed to more than 10,400 subscribers free of charge and is available online at www.gfredlee.com/newsindex.htm.

Correspondence with US EPA in response to the US EPA **Solid Waste and Emergency Response Discussion Forum** request for comments on improving solid waste management and hazardous chemical site investigation/remediation, including the Agency's responses.

Via email

December 12, 2009

US EPA Administrator Lisa Jackson,
Assistant Administrator Marty Stanislaus,

I have recently become aware of the US EPA **Solid Waste and Emergency Response Discussion Forum** request for comments on improving solid waste management and hazardous chemical site investigation/remediation. In response to this request I have prepared the attached discussion of these issues. I have been active in working with the public potentially impacted by the siting of a MSW and hazardous waste landfill in their area. As indicated in the attached if the US EPA through this Forum is developing a program that is designed to address the significant deficiencies in the US EPA regulations governing MSW management and Superfund site investigations/remediation I am willing to devote time to assisting the US EPA in this effort. Please contact me if I can be of assistance. Fred

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Attached is the updated "Flawed Technology" review available
<http://www.gfredlee.com/Landfills/SubtitleDFlawedTechnPap.pdf>



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

MAR 29 2010

OFFICE OF
SOLID WASTE AND
EMERGENCY RESPONSE

Dr. G. Fred Lee
G. Fred Lee & Associates
27298 East El Macero Drive
El Macero, California 95618-1005

Dear Dr. Lee:

Thank you for your letter of December 12, 2009 to the U.S. Environmental Protection Agency Administrator Lisa P. Jackson offering your services. As you note, the Office of Solid Waste and Emergency Response Discussion Forum is a new tool for us to obtain input.

We thank you for your offer of assistance on issues dealing with municipal solid waste and hazardous waste landfills, and also with the Superfund Program. If the Office of Superfund Remediation and Technology Innovation or the Office of Resource Conservation and Recovery identifies a need, we will contact you.

Thank you for your kind offer of support.

Sincerely,

A handwritten signature in blue ink, appearing to read "Elizabeth Southerland".

Elizabeth Southerland, Director
Assessment and Remediation Division
Office of Superfund Remediation and
Technology Innovation

Sent via email on June 8, 2010

US EPA Administrator Lisa Jackson,
Assistant Administrator Marty Stanislaus,

Last December I sent you an email following up on the OSWER announcement of a US EPA Solid Waste and Emergency Response Discussion Forum program to address improving solid waste management and hazardous chemical site investigation/remediation, providing information on these issues based on my expertise and four decades of professional experience. Since that time, I have updated our review paper that addresses significant problems with the ability of US EPA Subtitle D landfilling regulations to protect public health and the environment from pollution by MSW-derived chemicals throughout the period during which those wastes in a Subtitle D, dry-tomb-type landfill will be a threat. As discussed in our attached review, current landfilling regulations are based on a "Flawed Technology" of trying to achieve protection of public health and environmental quality by attempting to isolate the wastes from the environment using plastic sheeting- and compacted soil- lined "dry tomb" landfills, Such systems as allowed will not provide waste isolation, much less protection of public health and environmental quality, for as long as the wastes in the landfill will be a threat.

In my previous email I indicated that if there is interest I would be willing to donate my time in support of the US EPA efforts to address these issues. If you have questions on our review, please contact me.

Fred

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**Updated Review of the “Flawed Technology”
of US EPA Subtitle D MSW Landfilling**

G. Fred Lee, PhD, PE, BCEE, F.ASCE and Anne Jones-Lee, PhD

June 7, 2010

The current US EPA Subtitle D landfilling regulations, adopted in 1992, were crafted under the hand of litigation settlement. They were not developed through considered input of and evaluation by the experienced technical community or with scrupulous peer review for the ability of the regulatory specifications to ensure true protection of public health and environmental quality for as long as the landfilled wastes would represent a threat. In fact, during the Subtitle D development process, the US EPA repeatedly indicated that the proposed landfilling regulations would not be protective of groundwater quality over the period that the wastes in the prescribed “dry tomb” (plastic-sheeting and compacted soil-lined) landfill could be a threat. Indeed, the US EPA noted that the “dry tomb” landfills as prescribed and allowed by the regulations could be expected to fail to prevent production of landfill leachate and the migration of that leachate to groundwater. It was clear from the outset that the Subtitle D regulations represented a fundamentally flawed technology. The fundamental flaws of the Subtitle D specifications have not been overcome in the implementation of the regulations over the past 18 years since its adoption.

In the early 1990s Drs. G. Fred Lee and Anne Jones-Lee developed an extensive overview discussion of public health and environmental quality problems that can be caused by landfilling of municipal and industrial solid wastes under the applicable US EPA Subtitle D regulations. The review, which was posted on their website [www.gfredlee.com], was based on their professional experience in reviewing the impacts of proposed and existing landfills, their university research on landfill liner integrity issues, their search and review of the professional literature, and the provisions, requirements, allowances, and implementation of Subtitle D regulations. It included an overview of a number of key deficiencies in Subtitle D with regard to landfill siting, design, construction, operation, closure, and post-closure monitoring and maintenance for the protection of public health and environmental quality for as long as the wastes in the landfill represent a threat to public health, water resources, air quality, and the interests of those in the sphere of influence of a landfill. In addition to highlighting regulatory shortcomings, the review also discussed key elements that need to be incorporated into the landfilling of non-recyclable solid waste components in order to more reliably protect public health, environmental quality, and the interests of those in the sphere of influence of a landfill. It also included substantial references to, and internet links for, professional literature where additional information on the issues discussed could be obtained. Based on their experience and findings, they described the Subtitle D regulations in their review as advancing and enabling a “Flawed Technology” that falls far-short of protecting groundwater and surface water quality from pollution by municipal and industrial solid waste leachate (garbage juice) for as long as the landfilled wastes will be a threat.

Periodically over the past two decades, Lee and Jones-Lee have updated their “Flawed Technology” review with new information on the topics discussed and the addition of discussion of new issues that have come to light since the previous update. In June 2010, Drs. Lee and

Jones-Lee again updated their “Flawed Technology” review, and incorporated an additional nine pages of text and references. The updated, now 94-page, review is available as:

Lee, G. F., and Jones-Lee, A., “Flawed Technology of Subtitle D Landfilling of Municipal Solid Waste,” Report of G. Fred Lee & Associates, El Macero, CA, December (2004).
Updated June (2010). <http://www.gfredlee.com/Landfills/SubtitleDFlawedTechnPap.pdf>

In addition to improved clarity of presentation, the June (2010) updated review includes several new or expanded sections on a variety of issues including:

- additional statements by the US EPA acknowledging the inevitability of failure of landfill liner systems,
- monitoring stormwater runoff from landfills and hazardous chemical sites,
- unregulated, potentially hazardous and otherwise deleterious chemicals in municipal solid wastes,
- Subtitle D or equivalent landfills in other countries, including in a new proposed landfill in Alberta, Canada,
- the inappropriate development of a landfill atop a fractured rock, sole-source aquifer system in an area that is subject to intense seismic (earthquake) activity,
- the inadequacy of information published by SWANA on bioreactor landfills,
- the potential for leachate and landfill gas produced in construction and demolition (C&D) waste landfills to pollute groundwater and lead to offsite explosions.

The abstract and table of contents for the June (2010) update of the “Flawed Technology” review is attached.

The authors anticipate continuing to update this review periodically as new information and experience comes to light. Therefore, if you identify topics that are not covered in this review, or if you have comments or questions about this review, please contact G. Fred Lee at gfredlee@aol.com.

Flawed Technology of Subtitle D Landfilling of Municipal Solid Waste

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Updated June 2010

Abstract

This report presents a review of the information available pertinent to public health and environmental quality protection issues for proposed and existing Subtitle D landfills. Based on this review it is concluded that this type of landfill will at most locations cause groundwater pollution by landfill leachate and be adverse to the health, welfare and interests of nearby residents and property owners/users. As discussed, there is normally significant justification for those near a proposed Subtitle D landfill to oppose the development of the landfill and the existence of an operating Subtitle D landfill.

Typically landfilling regulations require that,

- (a) *the solid waste facility shall not pose a substantial endangerment to public health or safety or the environment;*
- (b) *the solid waste facility shall not cause an environmental nuisance.*

Frequently in review of a proposed landfill, the regulatory agency staff do not adequately or reliably evaluate the potential for a proposed landfill to endanger public health, safety and the environment, and cause nuisance on adjacent properties.

Subtitle D landfills have the potential to generate leachate (garbage juice) that will pollute groundwater with hazardous and deleterious chemicals that are a threat to human health and the environment for thousands of years. These landfills have the potential to generate landfill gas that will contain hazardous and obnoxious chemicals for a long period of time well beyond the current minimum 30-year funded postclosure period. Specific deficiencies in the siting, design, operation, closure and postclosure care provisions for Subtitle D landfills include:

- a single composite landfill liner that will eventually fail to prevent leachate pollution of groundwater,
- a landfill cover that will eventually allow rainfall to enter the landfilled wastes which will generate leachate that will pollute groundwater,
- a grossly inadequate groundwater monitoring system that has a low probability of detecting leachate-polluted groundwater before it leaves the landfill owner's property,
- inadequate postclosure funding for landfill monitoring, maintenance and remediation of polluted groundwater for as long as the wastes in the landfill will be a threat,
- inadequate buffer lands between where wastes will be deposited and adjacent properties, which will result in adverse impacts on nearby property owners/users from landfill releases, including odors, dust, vermin, and noise and lights from landfill activities,
- decreased property values for owners of nearby properties.

In addition, at some locations there is an environmental justice issue associated with the development of a landfill that will be adverse to minority communities.

Flawed Technology of Subtitle D Landfilling of Municipal Solid Waste

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

AUG 12 2010

OFFICE OF
RESOURCE CONSERVATION
AND RECOVERY

Dr. G. Fred Lee
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Dear Dr. Lee:

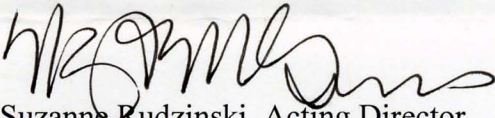
Thank you for your letter of June 8, 2010, to U.S. Environmental Protection Agency (EPA) Administrator Lisa P. Jackson, in which you notify EPA of an update to a report you authored titled "Flawed Technology of Subtitle D Landfilling of Municipal Solid Waste" ("Landfill Report").

EPA appreciates your informing us of an updated version of the Landfill Report. My staff has downloaded a copy of the report from your web site. We will take the recommendations discussed in the Landfill Report under advisement and my staff will contact you should they have any questions regarding its findings.

EPA also welcomes your suggestion of a possible topic on the Office of Solid Waste and Emergency Response's Discussion Forum. Your input will be taken into account as we consider future topics for the Discussion Forum.

Again, thank you for your letter. If you have further questions, please contact Craig Dufficy of my staff at dufficy.craig@epa.gov or (703) 308-9037.

Sincerely,


for Suzanne Rudzinski, Acting Director
Office of Resource Conservation and Recovery