

**TRI-TAC LAND COMMITTEE  
ISSUE SUMMARY  
LAST UPDATED SEPTEMBER 2006**

**1. LEGISLATIVE UPDATE**

Both SB 926 (Florez) & SB 120 (Florez) are not being pursued by the author. CASA, Tri-TAC, SCAP, BACWA and CVCWA plan on meeting again to discuss potential state-wide biosolids legislation.

*Contact: Layne Baroldi, OCSD  
Last Updated: September 2006*

**2. BAY AREA EFFORT ON DEVELOPING A REGIONAL FACILITY**

Seven wastewater treatment agencies in the San Francisco Bay Area are pursuing the feasibility of developing a Regional Biosolids Processing Facility. The main impetus for proceeding with this study is the increasingly restrictive environment for recycling biosolids via land application and the associated anticipated cost increases. The majority of the agencies participating in the study have very limited biosolids management options in place.

The potential synergies and benefits associated with developing a regional solution to biosolids management include:

- Economies of scale; especially compared to each POTW developing and operating its own processing facilities or Class A solids handling facilities;
- Enables agencies to diversify biosolids management options;
- Provides a viable alternative for smaller agencies that have less biosolids and therefore less influence in the market;
- Assurance that biosolids products can be locally developed and beneficially used, which supports the credibility of Bay Area POTWs;
- Relative ease of permitting a single facility versus multiple facilities; and
- Reduction in competition among agencies for marketing of similar products

The feasibility study, which was completed in July 2004 and led by the Bay Area Clean Water Agencies (BACWA) Biosolids Committee, evaluated a range of potential technologies, sites for facilities, and governance structures for implementation of a regional biosolids management program. The Committee has determined that a Regional Biosolids Facility is feasible based on the following factors:

- There is interest in the facility from a broad cross-section of the Bay Area wastewater agencies.

- Technologies have been identified that are suitable for a regional facility.
- There are available sites within the 9-county Bay area to accommodate a regional facility.
- There appears to be agreement on conceptual governance issues related to a regional facility.

The participating agencies agreed in late 2005 to have CH2M Hill, who was under contract for Phase 2 activities, prepare a marketing study to verify that a market exists in the Bay Area for a thermally dried biosolids product. The objective of the study was also to gauge the magnitude of the potential market in the Bay Area. The marketing study was completed in March 2006 and it concluded that additional outreach and product information was needed to secure potential markets, but that a viable market exists in the Bay Area for a thermally dried biosolids product.

The seven participating agencies executed the Joint Exercise of Powers Agreement (JEPA) in July 2006. The JEPA provides the framework for cost sharing and decision making for the Phase 3 efforts which include facility planning and environmental documentation for a regional thermal drying facility. The seven agencies have also finalized the RFP scope for the Phase 3 efforts, which is planned to be issued in August 2006.

*Contact: Maura Bonnarens, EBMUD  
Last Updated: September 2006*

### **3. MAJOR RESEARCH INITIATIVES**

#### **Study on Reactivation and Regrowth of Fecal Coliform in Centrifuge Dewatered, Anaerobically Digested Sludge**

“In a recent study of anaerobically digested solids from seven wastewater treatment facilities, counts of fecal coliform bacteria increased after dewatering at four of the facilities tested. Immediately after centrifugation, fecal coliform counts increased from very low or nondetectable levels, often by as much as several orders of magnitude, at the four facilities where increases were observed. This study only looked at seven facilities and only facilities using anaerobic digestion and high-solids centrifugation for dewatering; numerous other stabilization and dewatering processes are also widely used.... The study identifies some potential control methods and mitigation strategies that utilities could use to reduce coliform levels. Developing specific information on mechanisms for reactivation and regrowth, as well as control methods and operational changes is the focus of further research which is already underway.” (Source: WERF Fact Sheet)

The complete WERF Fact Sheet can be downloaded at <http://www.werf.org/pdf/ReactivationFactSheet.pdf>

Additional documents can be downloaded at <http://www.wef.org/ScienceTechnologyResources/Biosolids/ReactivationFecalColiform.htm>

### **Presence of Prions in Land Applied Biosolids**

“Prions are associated with, and may cause transmissible spongiform encephalopathy (TSE) diseases in animals and humans. Brain tissues affected by these diseases have tiny holes in them making them resemble a sponge when viewed under a microscope. TSE diseases are untreatable and fatal. The most common examples of TSE diseases are Chronic Wasting Disease (CWD) in deer/elk/moose, BSE or Mad Cow Disease in cattle, and Scrapie in sheep. Prions are thought to cause a variant form of Creutzfeldt-Jakob Disease (vCJD), a fatal neurodegenerative illness, and Kuru in humans... There have been concerns raised that prions present in animal remains could enter the wastewater stream, survive the treatment process, and be released into the environment in discharged effluents and/or biosolids. Most recently, attention has focused on the management of infected deer and elk carcasses to avoid the release of CWD prions... Based on a review of available information and assessments made to date, it is unlikely that significant levels of prions enter the wastewater collection system and the risk of prion transmission directly to animals and indirectly to humans from biosolids management and effluent land application is practically zero.” (Source: WEF Fact Sheet)

The preliminary stages of research on the fate of prions in biosolids are underway. Additional updates on this topic will be posted when available.

The complete WEF Fact Sheet can be downloaded at <http://www.wef.org/ScienceTechnologyResources/Biosolids/PrionFactSheet.htm>

The Prion White Paper can be downloaded at <http://www.wef.org/ScienceTechnologyResources/Biosolids/PrionWhitePaper.htm>

### **National Science Foundation Arizona Water Quality Center**

The WQC Spring Meeting was held in Tucson, AZ on May 1-2, 2006. The program featured progress reports of studies on PBDEs in biosolids and pathogen reduction during the land application of biosolids. In addition, a proposal for a study on the fate of prions in biosolids was presented. The WQC Fall Meeting is scheduled on December 4-5, 2006 at the Arizona State University campus in Tempe, AZ. For more information, please visit <http://wqc.arizona.edu>.

### **Pacific Southwest Organic Residuals Symposium – Recycling of Non-Hazardous Organic Residuals to Products and Energy**

The sixth in a series of Organic Residuals symposia co-sponsored by USEPA and the Water Environment Federation was held July 12-14, 2006, in Sacramento, CA.

Proceedings of the event, focusing on the innovative treatment and uses for organic residuals in the western states, are available at the WEF web site under the heading "Innovative Uses of Biosolids and Animal Manure." Information on WEF's Agricultural and Residuals Subcommittee can be obtained at the following link:

<http://www.wef.org/MembershipCareers/MembershipInformation/CommitteeList/AgriculturalandIndustrialResiduals.htm>

## **Current WERF Studies Update**

### *Quantification of Airborne Biological Contaminants from Land Applied Biosolids*

This report covers progress from August 1, 2005 to December 1, 2005. Task #1 (literature review) and task #2 (research team building) are complete. Task #3 is the aerosol source flux and characterization experiments and is now complete, as well. The new information since the last report that was required to complete this task is presented in this report. This information includes both source emission rates for PM10, microbial indicators, and metals during disk incorporation, and particle size distribution of aerosol emitted during disk incorporation. Task #4 is the aerosol transport experiments. Of the six sampling experiments planned, all six have now been completed and transport additional data is presented in this report. Task #5 is high wind aerosolization experiments. All sampling has now been completed for this task and only data analysis remains.

In the next quarter, work will focus on the following areas listed in order of priority: (1) aerosol transport modeling, (2) completing all measurements, and (3) data analysis and report writing. Completing all measurements specifically refers to completion of the clone libraries (they are now greater than 90% complete, only a subset of fungi cloning remains), and viral analysis of aerosol samples. Viral aerosol sampling has been completed, but the project team has delayed analysis until the spring of 2006 as it has recently installed quantitative polymerase chain reaction (PCR) equipment in its laboratory and therefore the analysis can be moved from detection to quantification.

### *An Investigation into Biosolids Sampling and Handling Methods for USEPA-Approved Microbial Detection Techniques*

The initial phase of the project has consisted of five tasks: 1) a literature review including sampling methods used for water, soils and other matrices, 2) a survey of Publicly Owned Treatment Works (POTWs) as to their sampling practices, 3) a workshop at WEFTEC.05 to identify and define research needs and directions for this project, 4) integration of tasks 1 and 3 to develop a short list of sampling protocols for experimental analysis, and 5) identification of facilities and experts to be utilized in Phase II and III of the project.

The second phase of work involves conducting sampling and exhaustive microbial analysis of biosolids products from two or three facilities utilizing different biosolids treatment technologies to determine which of the short list methods provide the most

representative samples. The Phase II workplan and experimental data are being reviewed by the Project Subcommittee.

A synthesis document incorporating sampling-related issues and questions and information gathered from the literature review, utility survey and WEFTEC.05 Workshop will be prepared and, once reviewed, made available to WERF subscribers. The third phase of the project will be to optimize and field test the best sampling techniques identified in Phase II, by applying sampling and testing at up to ten facilities utilizing a variety of different biosolids treatment techniques.

#### *Biosolids Samples Processing for Analyses of Pathogens*

During the initial six months, nine protocols were compared for their efficiency to recover viral and bacterial pathogens from biosolids. Later, three selected protocols were extensively compared for recovery of viruses from anaerobically digested biosolids samples. This task is nearly completed. Additionally, the three protocols were compared using aerobically digested biosolids. The protocols were further modified and better recoveries have been achieved.

Similarly, for removing PCR inhibitors from sample concentrates, initially seven protocols were compared using anaerobically digested biosolids. Currently the protocols are under examination using different types of biosolids.

The effect of pathogens residence time in biosolids on their recovery was not included in the original or revised scope of work. However, it was decided that this issue should be addressed. As planned, the effect of residence time in biosolids on the recovery of viruses from biosolids was investigated during this reporting period. The project team's work will now focus on further optimization of the protocols selected for pathogens recovery and the removal/mitigation of PCR inhibition. Selected protocols will be tested using aerobically digested, anaerobically digested air-dried and composted biosolids.

The protocols for PCR inhibition mitigation will be further optimized by including a filtration step in the sample processing protocol. The project team plans to use glass wool and cellulose acetate fibers for selective adsorption of viruses onto its surface, which can be recovered by eluents compatible with molecular techniques.

The team plans to optimize enzymatic digestion protocol to selectively degrade organic contaminants such as polysaccharides, polypeptides, and fatty acids. Different incubation conditions and enzyme concentrations will be tried for optimization work. Work on the detection of bacteria and parasites using molecular techniques will be resumed.

#### *Assessing the Fate of Emerging Pathogens in Biosolids*

Project Description: Detects and follows the fate of emerging pathogens in biosolids from the treatment process through land application until they are undetectable. This will help address public health concerns regarding land application of biosolids.

### Pathogen Risk Indicators for Wastewater and Biosolids

Extensive literature reviews for the wastewater and biosolids matrices have been carried out with a suite of pathogens representative of the four major groups of pathogenic microorganisms being proposed for each matrix. Indicators representative of these four major groups have also been proposed for both matrices. Information used in the decision making process has been captured by preparing a 1-2 page information sheet on each pathogen and indicator. The strengths and weaknesses of each pathogen and indicator proposed for wastewater have been further summarized using a table. Analytical methods for pathogens and indicators have been put forward.

Information on the design of the laboratory wastewater treatment processes to be used to evaluate performance of both pathogens and indicators has also been prepared, with construction of some of the equipment having begun.

Questions raised regarding the certain aspects of some of the proposed representative pathogens and indicators have been addressed and final agreement on these is expected shortly. Initial analyses of wastewater will take place in South Australia to confirm method success and presence of chosen pathogens and indicators. The chosen pathogens and indicators will be further confirmed or rejected based on analysis of wastewater and sludge in Africa, Europe and Australia. Alternatives may have to be chosen depending on the outcome of this phase of the project. Laboratory scale wastewater and sludge treatment processes will be used to evaluate the effectiveness of pathogen and indicator removal. These laboratory data will be validated by analysis of samples taken from full-scale plants. The data will be incorporated into a guidance document detailing usefulness of the new indicators for monitoring of wastewater and sludge treatment processes.

Contact: Matt Bao, LACSD  
Current as of August 2006

## **4. LOCAL ORDINANCES**

### **Kern County**

On June 6, 2006, nearly 83 percent of Kern County voters approved Measure E, an initiative banning the land application of both Class A and Class B biosolids in *unincorporated* Kern County. The initiative impacts two farms (City of L.A.'s Green Acres and Tule Ranch) consisting of over 8,000 acres of Class A biosolids-permitted land where Kern County claims approximately one third of the state of California's biosolids are currently managed. The initiative went into effect on July 22, 2006, and requires all land application to cease by January 22, 2007. The initiative contains provisions for extensions of the termination of land application for six months upon a showing of a "hardship". On August 4, 2006, Tule Ranch's hardship extension was

denied by Kern County staff. Tule Ranch has appealed staff's decision to the Kern County Board of Supervisors.

In anticipation of litigation, the Los Angeles City Counsel approved the request for \$800,000 to hire two legal firms, Washington D.C.-based Beverage and Diamond and Bingham McCutchen. The City of Los Angeles (who manages over 99 percent of its biosolids at its Kern County farm) supported by several co-plaintiffs, including CASA, LACSD, OCSD and several private parties, filed a lawsuit in federal court on August 15, 2006 challenging Kern County's initiative. In the lawsuit, the plaintiffs ask the court to invalidate Kern County's ban via several legal causes of action and, by doing so, validate EPA's regulations that encourage the beneficial use of biosolids through land application. A preliminary injunction will be filed in early September 2006.

*Contact: Layne Baroldi, OCSD  
Current as of: September 2006*

### **Kings County**

On June 7, 2005, the Tulare County Superior Court adopted the Kings County's statement of decision as the decision of the Court, thus upholding the validity of the Ordinance allowing for the use of Class A/EQ compost as the only form of biosolids to be allowed in Kings County.

In April 2006, the Kings County Planning Commission granted a two-year extension for a permit to build a 500,000 ton/year biosolids composting facility near Kettleman City. The facility's output would then be land applied on 12,000 acres of nearby farmland owned by the Sanitation Districts of Los Angeles County. The Kings County Board of Supervisors approved the project in 2004.

*Contact: Layne Baroldi, OCSD  
Current as of: September 2006*

### **Riverside County**

Encompassing over 7,000 square miles, Riverside County is the fastest growing of California's 58 counties. With a population of over 1.5 million, Riverside County is a semi-arid region that remains one of California's major agricultural producing counties. Some portions of the County are undergoing a transformation from rural to urban communities. Many of these urbanizing areas are located within larger agricultural regions that are populated with dry-farmed and irrigated farmlands as well as dairies and animal feed lots. In crop production, soil amendments, including biosolids, are routinely used by area farmers to aid in their efforts to conserve water, provide nutrients to the soil, and maximize their crop yields. The recent rise in urbanization within the County has been accompanied by an increase in resident complaints about typical agricultural nuisances.

The recent biosolids ordinance adopted in Riverside County in September 2004 was specifically designed to address such nuisance issues. The ordinance was the result of

a 2 ½-year effort by a broad coalition of stakeholders who comprised the ordinance committee. The committee included members from the public, the scientific community, the farming community, residuals appliers, and wastewater treatment agencies. The purpose of the committee was to develop an ordinance based on an evaluation of biosolids relative to public health, environmental health, and nuisance factors and, which establishes a mechanism for local enforcement that provides for appropriate fees.

The committee found that while there are nuisances associated with the land application of biosolids that warrant regulation, there is *no verifiable evidence* of clinical illness related to the use of Class A biosolids. The final ordinance developed by the committee was thus designed to mitigate nuisances. A consensus-based approach was used to enable the committee to reach a practical solution that considers the needs of each stakeholder group. The ordinance specifically applies to the land application of Class A biosolids to farmland greater than 2 acres in size in the unincorporated portions of the County.

After hearing a recommendation from the Riverside County Department of Environmental Health to adopt this consensus-based ordinance, the Board of Supervisors unanimously voted in favor of adoption. While some members of the public remain opposed to the land application of biosolids, the Riverside County Department of Environmental Health has indicated that all complaints about biosolids over the past two years have been determined to be due to the routine agricultural practice of manure spreading. In no instance was biosolids found to be the cause of the complaint.

Although County officials have indicated there is a potential for extensive land application of Class A biosolids in the future on the farmlands in the County, there is now a local regulatory framework in place. This framework has been specifically designed to address the local environment, mitigate nuisance conditions, and provide a local enforcement mechanism while allowing for the continued use of biosolids by the agricultural community as a valuable soil amendment.

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Current as of: September 2006*

### **Solano County**

The Solano County revised ordinance permitting the continued land application of Class B biosolids has been in effect since the Spring 2003. As part of the revised ordinance, a Scientific Research Steering Ad-Hoc Committee was established to provide recommendations to the Solano County Department of Environmental Management (DEM) on how to best utilize the research and/or education funds provided for in the revised ordinance. The committee was comprised of a full range of interested parties including concerned citizens, representatives of local citizen groups, farmers, regulators, elected officials, management contractor representatives, representatives from the wastewater treatment community, and CASA.

On January 13, 2004, the Board of Supervisors adopted the \$10 per acre research fee recommended by staff. Community feedback regarding the land application during the recent spreading season was positive as were comments regarding the outreach efforts made by the wastewater treatment community. The sunset date on the current ordinance is October 2007.

Staff presented their annual biosolids report to the Board of Supervisors in February 2006. The 2005 land application season went well and the County received only three complaints during the season. Solano County Staff also held a stakeholder meeting in April 2006 to review the 2005 land application season, and also to begin discussions on proposed changes to the land application ordinance, which sunsets in October 2007. During the stakeholder meeting, attendees did not vocalize thoughts on proposed changes to the ordinance. Staff has indicated the next stakeholder meeting will occur in September 2006 and that they are working to have a revised ordinance in place before the next land application season, which begins in April 2007. At the stakeholder meeting Staff also presented results of the fecal coliform testing they had performed during the 2005 application season. Biosolids were sampled for fecal coliform upon arrival at the land application field to identify if regrowth was occurring. Staff also sampled soil from application fields after the land application season was complete to determine fecal coliform levels in the soil after the biosolids were applied. Staff indicated that the fecal coliform levels in biosolids from SFPUC were below the 2 million MPN value upon arrival at the field, and they also indicated that the fecal coliform levels in the soil samples were very low. Moreover, soil samples taken from biosolids applied fields actually had lower levels of fecal coliform than those without biosolids application.

Solano County is currently funding a research study to determine the fate of pharmaceuticals and personal care product levels in biosolids that are land applied in Solano County. The research is being performed by University of Mississippi during the 2006 land application season. Results will be shared with the stakeholders when the study is complete.

The current land application season has been going well. Solano County staff reported one complaint from a neighboring farmer, who is in the pesticide business, that he was worried about contamination from the adjacent biosolids applied fields. The general comment of one staffer was that "things have been very quiet this year." There have been some reported concerns over the proposed expansion of the Potrero Hills landfill, to which both EBMUD and SFPUC send material as Alternative Daily Cover. Biosolids were specifically named as one concern relative to the landfill expansion.

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Current as of: September 2006*