TRI-TAC AIR COMMITTEE
JUNE 8, 2006

Issue Summary

1. WERF ODOR CONTROL TECHNOLOGIES ASSESSMENT

Los Angeles County Sanitation Districts (LACSD) and CH2M HILL received a Water Environment Research Foundation (WERF) Odor Assessment grant for a multi-phase research program. The primary purposes of this study are to provide a working definition of odors, determine POTW odor sources, list known odor compounds of concern, provide odor assessment approaches, provide modeling techniques for odor emissions estimating and odor dispersion, and conduct field research on the most important odor issues. The first phase was primarily a literature search that was used to develop a field research agenda for the second phase studies. This phase also looked at what has been successfully used at industrial and agricultural sites to control odors and whether there is any application to POTWs. In the second phase of the study, the WERF team assessed potential origins of odors from biosolids processes following stabilization by anaerobic digestion. The research aimed at determining the means of odor generation in various dewatering, storage, and conveyance processes.

The overall purpose of the Phase 3 research is to identify the most optimal means of reducing odors in anaerobically digested and dewatered biosolids, thereby reducing negatively perceived impacts on the environment or public when the biosolids are beneficially used on land. Results will ideally present a roadmap for wastewater treatment plant operators for optimization of biosolids processing in order to reduce biosolids cake odors. This third phase incorporates the theories and strongest correlations formed in the Phase 2 work, and includes both laboratory (bench-scale) studies and manipulation of plant parameters at full scale.

In Phase 3, laboratory studies at Bucknell and Virginia Tech have been completed assessing the following variables on odor production within the solids processing train: (1) the role of metal cations (primarily iron and aluminum), (2) the effects of digester solids retention time (SRT), and (3) the effects of dewatering process control parameters. Biosolids samples were collected at facilities throughout North America to produce data points for this study. Laboratory studies were also completed investigating the effect of enhanced digestion processes on odor production of the dewatered cake.

In addition, the WERF team has completed pilot studies at the Los Angeles County Sanitation District (LACSD) Joint Water Pollution Control Plant and Philadelphia Southwest Water Treatment Plant. At these facilities, side-by-side comparisons of dewatering facilities have been run, testing odor production of various means of chemical dewatering. Also at pilot scale, the WERF team analyzed the effect of chemical injection of ferric chloride and lime prior to dewatering.

Some preliminary conclusions, based on initial testing, are as follows:

- The concentrations and ratios of cations such as iron and aluminum appears to play a role in cake odor production, but the relationships are complex and will require more research.

- Longer digester SRT appears to reduce Residual Biological Activity (RBA) in the digested biosolids (as measured by additional volatile solids reduction) as well as cake odors.

- Advanced digestion processes that result in significantly higher volatile-solids destruction may help to reduce the level of cake odors when compared to the standard, mesophilic-anaerobic digestion process.

- Addition of ferric chloride to digested solids prior to dewatering helps to bind proteins in the cake, thereby reducing cake odors. Addition of low levels of lime (5% or less by mass of lime to dry mass of solids) appear to increase cake odors.

- Variations in centrifuge type and operating parameters can produce cake odor reduction in varying degrees.

- At one facility where a belt filter press was compared side-by-side with a high-speed centrifuge, the odor from the belt filter pressed biosolids was substantially lower (by about 75%) than from the centrifuged biosolids.

Update: Currently, the WERF team is conducting lab studies to investigate the effect of chemical, enzymatic, or biological agents (CEBAs) on odor production in digested biosolids. Pilot-scale testing of CEBAs will be conducted in August and September 2006. A workshop to present initial findings is scheduled for WEFTEC 06. Results will be published in the final report, which will be completed in early 2007.

Contact: Jay Witherspoon, CH2M HILL; Greg Adams, LACSD

2. U.S. EPA Region V Requests Information on VOC and HAP Emissions from Collection Systems

On September 17, 2004, the Air Enforcement and Compliance Assurance Branch of U.S. EPA Region V requested that the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC) estimate volatile organic compounds (VOC) and hazardous air pollutants (HAP) emissions from its collection system using the WATER9 model. MWRDGC, a member agency of NACWA (then AMSA), requested NACWA's perspective on the use of the collection system component of WATER9.

Since 2002, NACWA has been serving as a member of the U.S. EPA Office of Air Quality Planning and Standards' (OAQPS) ad hoc WATER9 Advisory Group,

specifically to address concerns that the model over-estimated WWTP emissions. As part of the model evaluation, NACWA raised significant issues related to the "new" collection system component. To date, NACWA has determined that the results generated by WATER9 are significantly different from the field-measured data, as well as from the results of two other collection system models (INTERCEPTOR and TOXCHEM+). In addition, issues of output consistency have been detected. Also, there is no way to replicate WATER9 computations by hand due to lack of documentation of the program's structure.

As part of the WATER9 evaluation, NACWA compared differences in model algorithms, to be followed by actual emissions testing. Until the WATER9 model can be refined so that it can more adequately characterize a collection system, NACWA believes it is premature to require its use to develop defensible emission estimates from POTW collection systems.

At the request of EPA Region V, the MWRDGC submitted a plan to estimate emissions from their TARP system (tunnels that store and convey CSOs). The plan would use modeling and sampling. EPA is concerned that when the tunnels were constructed in the 1980s that the District should have gotten an NSR permit.

Update: As of June 2006, MWRDGC is still conducting field sampling of VOCs from the TARP system.

NACWA has completed their evaluation of WATER9 and is preparing to send a letter to EPA's air office to alert them to the problems identified and to suggest the following improvements:

1. Improved documentation on model component selection, e.g. how to represent gravity-flow sewers in the model;
2. Improved documentation on model setup and execution; and
3. Improved documentation on the algorithms used, thereby allowing for independent evaluation of the model results.

NACWA is currently seeking member input on use of WATER9. Agencies that have used WATER9 are asked to contact Chris Hornback with input by June 23, 2006.

Contact: Greg Adams, LACSD; Jay Witherspoon, CH2M HILL

3. CARB DIESEL AIRBORNE TOXIC CONTROL MEASURES (ATCMS)

CARB has been working on several Airborne Toxic Control Measures (ATCMs) for diesel engines that have large impacts on POTWs, as they have the potential to force retrofits of existing diesel engines rated at 50 hp or larger. Tiered emissions standards have been set for stationary diesel emergency standby engines based on the number of

hours they operate for maintenance and testing. Engines that operate fewer than 20 hrs/yr would not be required to meet specific standards. Engines operating more than 20 hrs/yr must be retrofitted to meet specified emissions standards. Emergency use of standby engines can be unlimited and does not count against these hour totals. Retrofits are phased in, and older engines (pre-1989) have to be retrofitted first, by January 1, 2006 if the owning agency has 3 or fewer engines or by January 1, 2007 if the agency has 4 or more engines. The regulation can be found at www.arb.ca.gov/diesel/ag/documents/finalatcm.pdf.

CARB is also working on changes to AB2588 risk assessment rules to make them consistent with the ATCM. These modifications to AB2588 may trigger facilities that were not in the air toxics program before into the program based on diesel risk.
Portable engines are defined as engines that are not self-propelled but that change locations at least once every twelve months. Portable diesel engines are required to comply with fleet standards starting in 2013. The emission standards are averaged over an agency's "fleet" of portable engines. Along with the new portable diesel engine ATCM, which can be found at www.arb.ca.gov/regact/porteng/fro.pdf, amendments to the regulation for the Statewide Portable Equipment Registration Program have been proposed.

CARB has also adopted a diesel control measure for on-road heavy-duty diesel-fueled fleets owned and operated by public agencies, and public and private utilities. This regulation would affect all on-road vehicles with gross vehicle weight ratings of greater than 14,000 lbs owned or operated by a public agency or private utility. The ATCM would require phasing-in of Best Available Control Technology (BACT) for these vehicles between 2006 and 2011. There are some allowances for agencies in low population counties, and final compliance can be delayed if an agency meets early compliance deadlines for the older vehicle retrofits. A copy of the new regulation (without amendments adopted at the December 8th hearing) can be found at www.arb.ca.gov/regact/dpmcm05/appa.pdf and the latest info on implementation is available at www.arb.ca.gov/msprog/publicfleets/publicfleets.htm.

In addition to the Diesel Fleet ATCM, a Diesel Truck Idling rule was adopted by CARB on July 22, 2004. This new rule specifies that heavy-duty diesel vehicles have to be shut down after five minutes of idling. However, an exemption provides relief for most utility activities, since the rule does not apply when “providing mechanical extension to perform work functions for which the vehicle was designed and where substitute alternate means to idling are not reasonably available.” For more information on CARB’s adopted Diesel Truck Idling Rule: www.arb.ca.gov/toxics/idling/idling.htm.

***Update*:** CARB is also currently working on a control measure to reduce diesel PM from in-use off-road diesel mobile equipment greater than 25 hp. This control measure will affect construction equipment, mining equipment, airport ground support equipment, and industrial equipment such as forklifts. CARB staff held a workshop on March 15 to discuss regulatory concepts that have been revised based on feedback on previous drafts. The control measure is

envisioned to go into effect in 2007. More info is at www.arb.ca.gov/msprog/ordiesel/ordiesel.htm.

CARB staff is planning to hold a public hearing to adopt proposed amendments to the PERP regulation on June 22 in Sacramento. At the February 2004 Board meeting at which the last PERP revisions were adopted, CAPCOA raised concerns, and the Board directed staff to work with CAPCOA to resolve these issues. This hearing is to adopt amendments put forward by CAPCOA including recommendations or district inspection fees, notification requirements, and recordkeeping and reporting requirements. More info is at www.arb.ca.gov/portable/perpact/perpact.htm.

Contact: Frank Caponi, LACSD; Jackie Kepke, CH2M HILL; Daniel McGivney, Eastern MWD;

4. RISK ASSESSMENT GUIDELINES

The California Office of Environmental Health Hazard Assessment (OEHHA) embarked on a process to update Health Risk Assessment Guidelines. They began this process by updating the toxicity values used in risk assessments. This took place in 1999-2001 and yielded increases in the toxicity of some compounds and toxicity decreases for others. The next phase of the update involved an overhaul of the Health Risk Assessment Guidance Manual. OEHHA's Health Risk Assessment Guidelines were officially released on October 2, 2004. This guidance manual replaces the 1993 CAPCOA Air Toxics Assessment Manual currently in use.

The assumptions contained in the new guidance manual have the potential to significantly raise project risks. Changes in breathing rate assumptions as well as exposure durations will raise residential receptor risk by about 30% and will raise worker receptor risk by about 32%.

Concurrently, CARB developed a new computer software for risk assessment, the Hot Spots Analysis and Reporting Program (HARP). This software allows for analysis and reporting of risk assessments consistent with the new OEHHA Risk Assessment Guidelines. It is available for download on their website at: www.arb.ca.gov/toxics/harp/harp.htm.

CARB is also planning to put risk data, not just emissions data for AB2588 facilities on the web in the future. It will therefore be increasingly important to ensure that risk is calculated correctly and that data is right.

In October 2003, CARB issued a Recommended Interim Risk Management Policy for Inhalation-Based Residential Cancer Risk that modifies the assumptions for residential receptors contained in the OEHHA Guidelines. This effectively keeps risk for residential receptors similar to previous levels. The assumptions built into the HARP Software

reflect the Interim Policy. This Interim Policy does not modify assumptions for worker receptors, however, so project risks will likely be driven by risks to workers.

Update: In the 1990's, CARB was only considering the risk from benzene when evaluating diesel engines. The CARB guidelines are currently undergoing changes so that program is consistent with the Stationary Diesel ATCM. Starting next year, CARB will require the use of the cancer potency for diesel PM in addition to benzene. In addition, a new reporting threshold will replace current 3000 gal/yr diesel fuel usage threshold. These changes will potentially affect thousands of CA facilities, including those currently exempt.

CARB is proposing the use of ATCM inventory requirements (submitted in 2005) to meet the "Hot Spots" inventory requirements, to avoid duplicate reporting requirements. However, in order to assess risk, there will be some additional information required from facilities.

Risk from diesel in 2006 may be added to existing risk assessment score to determine status in Hot Spots after complying with hour limits for maintenance and testing (from the stationary diesel engine ATCM). CARB has developed screening tables to estimate risk from back-up engines without going through a full analysis. These tables show "worst-case" risk. Permittees or Air Districts can conduct a more refined analysis if they choose. Exemptions based on risk assessment (for facilities with risk >1/million) will be decided by individual districts. A "diesel engine-only" facility will be defined in the Hot Spots update. Diesel engine-only facilities will have a smaller state fee ($35). But, this does not affect District fees.
Districts have the option to conduct grouped public notification. For example, all POTWs/pump stations in a given area may be able to do joint notification.

A public hearing on these changes will be scheduled in 2006. Changes would go into effect 2006-2007 timeframe. Info is at www.arb.ca.gov/ab2588/diesel/diesel.htm.

Contact: Jackie Kepke, CH2M HILL

5. WASTEWATER SECURITY

In order to assist wastewater utilities in improving their security, WEF has developed a Wastewater Security Guidance Document. Development of this document was funded by U.S. EPA under the Water Infrastructure Security Enhancements (WISE) program, in conjunction with AWWA and ASCE. WEF will be providing training sessions. The document is free and available for download at: www.wef.org/ScienceTechnologyResources/TechnicalInformation/Projects/security_guidance.htm.

EPA, through WISE, has funded two additional phases of security guidance for water, wastewater, and stormwater. Under Phase II, training materials based on the guidance documents were developed to educate utility managers, operators, and designers about security issues. Under Phase III, which is kicking off in June, WISE will be developing standards for water, wastewater, and stormwater security. ASCE and AWWA will develop Draft American National Standards for Trial Use through the ANSI process to establish standards for online contaminant monitoring and drinking water security, WEF will use a similar process to develop standards for wastewater/stormwater security. The standards are scheduled to be complete at the end of 2006.

Update: NACWA sent a letter to the leaders of the Senate Committee on Homeland Security and Government Affairs alerting them to the clean water community's concerns with the *Chemical Facility Anti-Terrorism Act* (S.2145). Currently, S.2145 would apply to POTWs covered under section 112(r) of the Clean Air Act, subjecting them to potentially onerous security planning and reporting requirements intended to address private sector chemical plant security. The letter points out that EPA, not the Department of Homeland Security (DHS), should continue to retain authority over security programs for wastewater utilities. Also, wastewater security legislation has traditionally been under the jurisdiction of the Senate Environment and Public Works (EPW) Committee, where a new bill is expected to be introduced shortly by Chairman James M. Inhofe (R-OK) to address wastewater system security issues. Given the direct application of the EPW legislation to POTWs, NACWA has urged Senators Collins and Lieberman to modify S. 2145 so that it removes clean water utilities from the definition of covered facilities.

Contact: Jackie Kepke, CH2M HILL

6. CARB CONSUMER PRODUCTS REGULATIONS

On December 9, 2003, CARB released their initial staff proposal for establishing new VOC standards for consumer products. The proposal includes a 3% VOC limit on "Toilet/Urinal Care Products." This category includes solid deodorizers such as urinal cakes. Since para (paradichlorobenzene or 1,4-dichlorobenzene) urinal deodorizers are 100% VOC, this proposal would basically ban para urinal cakes in California. It would also mean that para emissions from POTWs should drop to essentially zero once the regulation is fully implemented. This will be most important for POTWs that have to assess cancer risk caused by emission from their treatment plants (either under SCAQMD Rules 1401 and 1402 or the AB 2588 Toxic Hot Spots Program).

CARB adopted a ban on consumer products containing paradichlorobenzene on June 24, 2004. The regulation bans these products from being manufactured in California starting December 31, 2005. Beginning December 31, 2006, these products cannot be sold for use in California.

Other VOCs banned for certain uses in the new regulation include tetrachloroethylene (perc), methylene chloride, and trichloroethylene. These chemicals are used in adhesive removers, contact adhesives, general purpose degreasers, electronic cleaners, footwear/leather care products, and graffiti removers.

In June 2005, CARB issued an Assessment to Evaluate Perchloroethylene Levels at Publicly-Owned Treatment Works (Assessment). The Assessment was conducted by the Air Quality Measures Branch to comply with the 1996 Consumer Product Regulations (1996 Regulations). Tri-TAC reviewed the Assessment, and our conclusions differed from those reached by CARB. A comment letter was submitted to CARB outlining our review ad conclusions. Most significantly, the CARB assessment asserted that "use of perc in consumer products, prior to the exemption, likely contributed to concentrations of perc in POTW influent. However, we have not found that the exemption led to increased perc concentrations in POTW influent." Tri-TAC disagreed and we argued in our letter that the data shows the exemption did contribute to increased influent levels of perc at publicly owned treatment works (POTWs).

Update: No update at this time.

Contact: Preeti Ghuman, LACSD

7. CARB'S OFF-ROAD LARGE SPARK IGNITION (LSI) EQUIPMENT RULE

CARB has begun to develop a rule for Off-Road Large Spark Ignition (LSI) Equipment. This general category is defined as equipment powered by gasoline or liquefied petroleum gas (LPG), with a power rating of greater than 25 hp. Examples of equipment included in this category are: forklifts, street sweepers, portable generators, large turf care equipment, and specialty vehicles.

The regulation will establish more stringent emission limits for both new and in-use equipment. Fleet average emission limits are proposed for operators of specific LSI equipment (forklifts, sweeper/scrubbers, industrial tow tractors, and airport ground support equipment) beginning in 2009. More information is at www.arb.ca.gov/msprog/offroad/orspark/orspark.htm.

Update: ARB consideration of the LSI rulemaking proposal has been postponed and will be rescheduled to a later date. ARB will post a "Notice of Recalendaring of Rulemaking Action for the Hearing to Consider Adoption of New Emission Standards, Fleet Requirements and Test Procedures for Forklifts and Other Industrial Equipment" once the item has been formally rescheduled.

Contact: Jackie Kepke, CH2M HILL

8. DISTRIBUTED GENERATION REVIEW

The CARB Distributed Generation (DG) work group has been discussing DG equipment fueled by waste gases, both from landfills and digesters. The work group is developing a certification method for small DG equipment (micro-turbines and fuel cells), which will serve in lieu of obtaining a permit from the local air district. Larger DG equipment will still require a permit to operate from the district.

At the DG work group meeting May 9, 2006, ARB staff introduced new draft language for the regulation. Surrogate fuel is to be used for certifying equipment. Surrogate for digester gas will consist of 60-65% methane and 35-40% CO_2. Equipment must be certified using surrogate fuel. If requirements are not met on a certified engine using non-surrogate fuel of the same type (e.g. real digester gas), that is ok as long as the equipment was certified using surrogate fuel. ARB recognizes that waste gas compositions vary.

***Update*:** A conference call will be held on Tuesday, June 13, 2006, to discuss proposed amendments to the DG Certification regulation. Staff has made changes to the proposed amendments since the May 9th workgroup meeting. These changes include keeping the 2007 emission standards as is: January 1, 2007, effective date; 60 percent overall efficiency; and CHP credit of 3.4 million BTUs per MW-hr. They are now proposing to make the waste-gas standards effective January 1, 2008. A copy of the proposed amendments and the meeting agenda can be found at www.arb.ca.gov/energy/dg/dg.htm.

Contact: Dan McGivney, Eastern MWD; Frank Caponi, LACSD

9. WERF COLLECTION SYSTEM ODOR AND CORROSION STUDY

CH2M H ILL and King County are co-principal investigators for a new WERF project focusing on minimization of odors and corrosion in wastewater collection systems. The project will transfer state-of-the-art technology and information from a literature survey and recent field experiences to collection system owners, designers, and operators on odor and corrosion assessment, measurement, characterization, monitoring, and prevention. This will be done through a five step approach including:

- Assembling published and unpublished information in a database of prior research, literature, and gray material utility studies

- Evaluating the database for quality, accuracy, and completeness and identifying potential knowledge gap areas where follow-up research or field studies are needed

- Classifying items in the database for information searching purposes and use by collection system owners and designers

- Preparing design and operational guidance from the available information. An initial "Plain English" summary guidance manual will be developed as part of Phase 1. This summary manual will highlight available knowledge on collection system odor and corrosion technologies.

- Developing a collection system assessment tool in Phase 2 and 3 to assist agencies in evaluating their collection system odor and corrosion issues.

Update: The literature search was conducted using existing databases, and articles were collected, logged, and reviewed. A solicitation for utility gray literature was also distributed and that literature was logged and reviewed. The Phase 1 report will be available in the fall.

A gap analysis and ranking was conducted to develop a research agenda for the next phase of work. The two highest ranked research items among the project team were analysis of odor compounds other than H_2S and sewer ventilation. Research on the topics agreed to by WERF and the PSC will begin this year.

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