Minutes For January 30, 2003

The Solano County Board of Supervisors met in special session at the Rio Vista City Council Chambers on this day at 6:05 p.m. The meeting was called to order by Chairman Kromm followed by the Pledge of Allegiance and a moment of silence. Present were Supervisors Kondylis, Vasquez and Chairman Kromm. Supervisor Silva was excused.

PRESENTATIONS

(Item 4) PRESENTATIONS BY DR. BARBARA (BOBBYE) SMITH AND DR. LAUREN FONDAHL, RE ENDOCRINE DISRUPTERS

Dr. Barbara (Bobbye) Smith, Regional Science Liaison at United States Environmental Protection Agency (EPA) in San Francisco, reviewed the information contained in the visual presentation, incorporated herein by reference, on Endocrine Disrupters: What Are They, Why is EPA Concerned, and What Research is EPA Conducting. The presentation began with an Overview, the Endocrine System, Endocrine Disrupter: Definition; Endocrine Disrupting Chemicals (EDC); Hormonally Active Chemicals; Classes of EDCs; Lines of Evidence; Why is EPA studying EDCs?; EPA's Research Plan; Multi-Year Plan for Research: Long-Term Goals; Examples of Research; concluding with a Summary and contact information.

Dr. Lauren Fondahl, EPA Region 9, noted her position involves compliance tracking and technical assistance. Ms. Fondahl noted questions relating to Endocrine Disrupters occurring in biosolids and that data is several years off before it is available to do a risk assessment to determine the exposure pathways and the concentrations that would be of concern, and a list of the disrupters that should be looked at. There is information available on disrupters for several compounds such as pesticides, PCBs, the DDT compounds, and some dioxins. Most of it comes from the industrial pretreatment program with a list of 126 pollutants that need to be tested. Usually the treatment plants get non-detection for many of the compounds of concern, and there is the question if the right detection limits are being used. Ms. Fondahl did note some of the compounds found and at what percentages in parts per billion found in biosolids. Standards are to be set for dioxins by October 2003. The pathways for exposure need to be established to determine at what levels the Endocrine Disrupters create an effect. Data should continue to be collected so that it is available to determine if further regulations are needed.

PRESENTATION BY DR. CHARLES GERBA REGARDING PATHOGENS IN THE ENVIRONMENT AND MICROBIAL RISK ASSESSMENT

Dr. Charles Gerba, Professor of Micro Biology University of Arizona, College of Agricultural and Life Sciences, provided information on his research on the fate of pathogens in the environment and microbial risk assessment of

biosolids. Dr. Gerba reviewed a visual presentation, incorporated herein by reference, titled Microbial Issues and Land Application of Biosolids, beginning with the Mission Statement; Current biosolids Projects of the Water Quality Center; Bacterial Concerns; bacterial Non-Concerns with Biosolids; Viruses viral concerns; Viral Concerns − Calicivirus; Viral Concerns; Parasite Concerns; Risk Assessment − Factors to Characterize the Risk; Factors Affecting Significance of Exposure: Evaluation of Bioaerosols from Land Applied Biosolids; Land Application of Biosolids; the Tucson Operation; the Mojave Arizona Operation; Solano County Operation; Unloading; Aerosol Samplers; Experimental Design; Indicator Microorganisms; Key Concept − Emission Rate; Conclusions; The Staphylococcus Story Facts and Allegations; and the Research Findings at the University of Arizona.

PRESENTATION BY DR. ALBERT PAGE RE THE FATE OF TRACE ELEMENTS WHEN APPLIED TO SOILS FROM BIOSOLIDS

Dr. Albert Page, University of California, Riverside, Department of Soil and Environmental Science, presented a visual presentation titled "Are Standards for Metals Applied to Soil from Municipal Sewage Sludge Adequate to Protect Human Health and the Environment", incorporated herein by reference. The presentation began with Trace elements, Trace Elements (Metals) of Concern Associated with Agricultural Operations; Are Current Federal Regulations Adequate? Conflicting Points of View; Criteria for the Development of Regulations; Typical Dose-Response Curve; Standards for Total Metals Applications to Agricultural Soils From Municipal Sewage Sludge; Maximum Biosolids Loading According to Current Regulations/Guidelines; Metals Concentrations for Biosolids; Trends in Metal Concentrations of Sewage Sludge Over Time from USA Municipal Treatment Plants; Concentrations of Trace Elements in California Soils; Trends in Disposal/Reuse of Biosolids; and a Summary.

PRESENTATION BY DR. RUFUS CHANEY RE METALS AND PCB'S IN BIOSOLIDS AND THEIR IMPACT TO PLANTS AND HUMAN HEALTH

Dr. Rufus Chaney, Environmental Chemistry Laboratory, United States Department of Agriculture-Agricultural Research Service, began his presentation "Beneficial Use of Biosolids in Agriculture and Horticulture and Why Rules Provide Needed Protections" with Two Ways to Set Limits for Metals and Organics in Biosolids for Beneficial Use; on Cropland, Advances in Beneficial Use-Advances after 30 Years and Research and Development; Soil-Plant Barrier; Complex Equilibria of Metal Ions with Components of Soil Environment; Pathway for Risk Assessment of Soil Contaminants and Highly Exposed Individuals; Exposure Definitions; Pretreatment and Regulatory Controls; Issues in Metals Persistence; Greenhouse Pot Studies Exaggerated in Phylotoxicity Risk; Addition of Zinc; Soil Test Results with Metals in Biosolids; Ohotographs of spray application method of biosolids and comparison fields;

Pathway 5 Tests on Surface Applied with Biosolids on Livestock Pasture; Data on Dietary Fat; Cancer Slope Factor with Pathway 5; Pathway 5 Tests; Guidelines Were Developed to Protect Against Biosolid Ingestion by Grazing Livestock; USEPA 503 Rule Provides High Protection Against Adverse Effects of Biosolids-Applied PCB's; Correct Limits for Biosolids Applied PCB's if PCB's had been included in the Final 503 Rule; Effects of Copper through Swine Waste; Pathway 5 Study Results with Various Metals; and Justification of the Federal Rule.

PRESENTATION BY JAY WITHERSPOON, MS RE ODOR CONTROL OPTIONS AND STRATEGIES

Jay Witherspoon, MS, Global Director of Municipal Air and Permitting Services, CH2M Hill, presented a visual presentation titled "Land Application of Biosolids Odor Control Options and Strategies", incorporated herein by reference. The presentation included an Overview, Biosolids Programs – Under Pressure, Biosolids Generators Must Be Proactive; Background; Identifying and Controlling Municipal Wastewater Odors; Water Environment Research Foundation (WERF) Odor Team; WERF Odor Study – Research Team Locations; WERF Biosolids Odor Study and Other Results; Biosolids Treatment; WERF Phase 2 – Sampling Program; Treatment Sources that can Impact Biosolids Odors; Digestion; Odor Comparisons Between Dewatering Centrifuges; Time to Peak for the Reduced Sulfur Compounds – All WERF Study Plants; Cake Odor vs. Cake Bound Protein for All Plants; Land Application Odors; PaDEP Land Application Study; PaDEP Land Application Odor Findings; Odors and Health Effects; WERF Objectives; Some Findings; Biosolids Odor Control Approaches and Strategies; Treatment Plant Operations; Source Control; Environmental Management Solutions (EMS) and Site Management; Benefits of EMS; the National Biosolids Partnerships (NBP) has Set the Tone for Improved Biosolids Management; NBP Activities/Materials are Integrated to Assist Agencies; the EMS Program Approach is Broken Down into 5 Areas; Site Odor Control; and Conclusions.

PUBLIC QUESTIONS AND ANSWERS

1. For Mr. Witherspoon. What is in an odor? Does smelling it mean that you are inhaling aerosolized components of sludge – pathogens, metals, etc?

Mr. Witherspoon noted odor is more like a dye, and does not know if the secondary pollutants are being carried with the odor or if the odor itself is just an indicator. The studies indicate that the odor indicates the movement of air from that site to that location.

2. For Dr. Gerba. The JEQDOWD et. al. 2000 Article that you co-authored was brought up at a past meeting. It was a theoretical modeling paper. How are the conclusions now seen in the context of your current bioaerosol data collected in Solano County?

Dr. Gerba noted the previous study reported was done in West Texas on the high plains, it is now considered a worst case example where biosolids were being tossed up to 150 meters on range land that was a long way from human habitation. Significant aerosol was generated within a few hundred feet of where applied. You probably would not want to use this method of application in areas were there is a lot of human habitation.

3. For Dr. Page and Dr. Chaney. If the farmer uses commercial fertilizer instead of California Biosolids, will he or she be adding more or less harmful metals to the soil? Compare the availability of metals in biosolids to metals in commercial fertilizers.

Dr. Page noted that with the use of commercial fertilizers, with the exception of phosphate fertilizers, are very low in metals.

Dr. Chaney noted there are 3 major sources of phosphates in the U.S., and explained the differences in cadmium in the zinc ores changing the ratios. The update is more bioavailable than it is from biosolids. You have to look at the potential food chain transfer and absorption. In that sense biosolids, in my judgement, we can not cause that risk in the U.S.

4. For Dr. Smith. How are the "common" endocrine disrupters filtered or removed from biosolids?

Dr. Smith noted the endocrine disrupters attach to solids. EPA is testing to see if there are viable ways of partitioning to solids.

5. For Mr. Witherspoon. Why do biosolids applied fields smell when it rains even months after application?

Mr. Witherspoon noted the biosolids dry on the surface creating a crust, the rain softens the crust allowing the odor to seep back through. I have also noted that the odor disappears after it dries again. The odor compound at that point is exhausted.

6. For Dr. Gerba. Seven months, 7 days, 24 hours per day 80,000 wet tons are aerosolized during this period. What is the consequence of exposure over time to all this foreign material to the people living in the down wind plume?

Dr. Gerba noted the biosolids are not continuously applied in one spot, they are applied on an area maybe once or twice a year. There is no continuous exposure. The exposure is intermittent, air dilution becomes a major factor, and so exposure to the individual is probably very limited and fairly short term. Even the workers at the facility are not heavily exposed. Microorganisms die in the air, the sunlight kills them, lack of moisture kills them, and they just die off naturally. The pathogenic organisms are the ones we are concerned about. Chemicals can be carried much further distances than

microorganisms. The amount that actually goes into the air is very very small.

7. For Dr. Page. Do you agree, since you sit on the commission in Riverside County, that the application of Class B being banned in your county was appropriate?

Dr. Page noted the major complaint from the citizens of Riverside County was odor. As far as I know, no health effects were associated with application of Class B biosolids. There are other factors in Riverside County. Manure is very commonly used; the populace tends to confuse the odors from manure with odors from biosolids or sewage sludge. Many of the complaints associated with odors were traced to animal manure as opposed to biosolids. I do not agree or disagree with the ban; this is a community decision.

8. For Ms. Fondahl. Is there a daily limit on tonnage, both staged and/or spread? Has there ever been a consideration of either a pathogen or odor plume level in relation to daily tonnage?

Ms. Fondahl. In terms of daily tonnage, there is a tonnage limit per field based on the amount of nitrogen the field needs for the crop that is grown but not a daily tonnage limit. Ms. Fondahl noted she has not heard anything regarding plume levels.

9. For Mr. Witherspoon. Does injecting biosolids underground significantly reduce odors? If so, how financially plausible would it be to require that all biosolids used in Solano County be injected? Would it be too much of a financial burden on farmers?

Mr. Witherspoon noted injecting biosolids as a liquid is an excellent way to reduce the odors. The more solid the biosolids the easier it is to apply on the surface and then till in immediately afterwards with the same benefit. It is more expensive to inject because more labor and equipment are required.

10. For Dr. Gerba. Based on your knowledge of bioaerosol sampling in Solano County, what do you feel are the relative risk of land applying biosolids and what setbacks should be maintained from urban centers? How does wind affect bioaerosol transport?

Dr. Gerba noted with the evidence that he has the 503 Regulations for setbacks seem adequate. Wind speed makes a difference with the increase of spreading of microorganisms with high wind speeds, and feels spreading could be regulated at certain wind speeds.

11. For Dr. Page. How applicable are European biosolids standards to the situation in the U.S. and Solano County specifically? Last week Dr. Ruben suggested that regulators in Europe are having a difficult time implementing the precautionary principle.

Dr. Page feels there is no scientific basis for the regulations in Europe. The European regulations say that we should no more than double the concentration of a particular element in the soil, some say we should not increase it. There is no relationship between the European regulations and U.S. regulations since they are based on different criteria. In the U.S. the theory is to use the soil to the maximum continuation capacity. In Europe they do not use the soil to its maximum continuation capacity.

Dr. Chaney noted that Europe does not have evidence that the U.S. numbers are wrong, just that they philosophically elect to go with the lower rate.

12. For Dr. Chaney. What is your view of the "Case for Caution"? Is it a credible document or overstatement?

Dr. Chaney noted there are three points of disagreement between the group's recommendation of the USDA group that has done much research on biosolids use. If I find that every metal related case is false, I think I have made my point.

13. For Ms. Smith. Is there any evidence that Endocrine Disrupter chemicals from biosolids are affecting human or animal health?

Ms. Smith noted this area has not be directly looked at.

14. For Mr. Witherspoon. What odors or VOC's are emitted during the desiccation of surface land applied biosolids? What is the "output" when the activity of staging and spreading goes on for 7 months, 7 days a week? Do these odors contribute to ground level ozone (smog)?

Mr. Witherspoon noted that in the Pennsylvania study trace organic compounds as well as some deodorants, ammonia and sulfur were found. Staging does allow for the deodorant to come out and will last for small periods of time. In relation to ozone the traces of the organic compounds are very small in relation to emissions from a car.

15A. For Dr. Page. During my commute on Highway 12, I noticed on two occasions that a steam rose up and covered areas that had been sludge applied. What is the effect on our water supply and the effect on the environment downstream?

15B. For Dr. Gerba. Would a flooded field, which had been field applied 3 months earlier, pose a health hazard if that floodwater ran off the field in an uncontrolled way?

Dr. Page noted that relating to a flooded field applied 3 months earlier, there is significant pathogen die off by the time there is enough saturation to get to the surface water it would be so diluted and would not present a risk. You must also consider all the animal droppings, cat and dog droppings, which

create much more contaminated water than you would get from a field of biosolids. The real issue is there significant rain in 24 to 48 hours after the field is applied with biosolids, which have been looked at. Generally the die off of viral pathogens is so great that by the time the runoff gets to a stream it would be so diluted that the risk would be insignificant.

Dr. Gerba feels it depends on the particular metal being referred to. Many of the metals are bound to soils, and any runoff would be in terms of particulate runoff not in terms of soluble runoff. There are some metals that are easily soluble, and could leave the field and enter streams in soluble form. In my experience, regulations would say that no runoff is permitted.

15. For Dr. Gerba. Put the risk of being exposed to pathogens in bioaerosols to that of everyday activities we perform voluntarily. Is it more or less of a risk?

Dr. Gerba noted that the risk of being near a sewage treatment plant, based on studies, is far greater that what we see in the biosolids. Biosolids have a lot of particulate matter, which helps with the rapid settlement of microorganisms. Flushing a toilet also creates a great aerosol.

16. For Ms. Fondahl. What is the annual budget of EPA, Federal, Region 9, and State of California? Why is there a court order involved with the NRC study and research?

Ms. Fondahl noted in terms of the amount of staff dedicated to biosolids the issue has been raised by people in different offices and headquarters and the region, there continues to be prioritizing of what we are working on. There are a number of other higher priorities. In the future it does not look like there will be additional staffing at the regional level. There have been some funds out there for regional research to address the NRC issues raised, and we are trying to prioritize those now.

17. For Dr. Gerba. EPA scientist David Lewis has presented evidence recently that staphaureus is linked to biosolids. His research shows that staphaureus grows in biosolids after it has been spread, introduced through vectors, such as flies. Have you reviewed his research?

Dr. Gerba noted his own study of staphoreous, which there is none in biosolids, and has note seen the papers where staphoreous is grown in biosolids. Mr. Gerba would be quite amazed if staphoreous is grown in biosolids since it is a normal skin inhabitant and doesn't really occur in the environment, even in background soils.

18. For Dr. Page. All fields in Solano County are pastures for livestock. What is the consequence of livestock grazing on these fields? Pasture fields do not have their sludge tilled under.

Dr. Page noted it is best to incorporate biosolids where possible. Metals are greater in biosolids than in the soil so the more biosolids an animal may ingest the greater the metals in the animal intake.
Dr. Chaney noted that if you look at the data we find there is no adverse effect of the metals on the health of livestock in any study conducted around the world.

19. For Dr. Gerba. The NAS Report suggested implementing a new pathogen risk assessment. How would this work and what do you think it will show?

Dr. Gerba agrees that a new pathogen risk assessment to reduce uncertainty with risk is needed. The technology has greatly evolved over the last 10 years. Currently we are gathering the numbers that can be used in a quantitative risk assessment to get a better handle on what the risk may actually be.

20. For Dr. Chaney. Can you explain why one farmer that had his cows on a land applied field right after the 30 days, that out of 400 cows only 100 cows conceived.

Dr. Chaney noted where experiments have been done there have been no adverse effects on conception.

22A. For Ms. Fondahl. Since you are charged with enforcement in the South Western United States, how many wastewater treatment plants have you inspected in the last 12 months? How many EPA personnel are assigned to enforcement in the South West region?

Ms. Fondahl noted she has inspected about 40 plants in the last year, and is the only one doing it at the regional level. It is difficult to inspect application sites; this is something that needs to be handled at a local level where someone can go out once a week to see what is going on. There has been some work at the Regional Water Control Board level with inspections, generally they will inspect if the application site is near the treatment plant.

22B. For Dr. Gerba. Besides EPA, does industry support your research? Since biodegradation continues as biosolids lie in fields for months, are you measuring it continuously for long periods of time? How does wind speed affect bioaerosol dispersion?

Dr. Gerba noted usually pathogens can not be detected after 2 days.

23. For Dr. Gerba. Why are there such strict NIOSH Regulations for sludge (field) workers if nothing exists to harm the workers?

Dr. Gerba noted there are only general sanitation regulations that the field workers must follow.

Dr. Chaney noted an Ohio case dealing with biosolids that had not even been treated to Class B, people did not wash their hands and the minimum heath protection and treatment of the biosolids to Class B was needed.

24. For Dr. Page. Why do farmers want biosolids as fertilizer/soil conditioner?

Dr. Page noted biosolids, as an organic amendment in our environment, is beneficial to soils. The farmers want the biosolids for the nitrogen and phosphorus concentrations, which at appropriate levels can satisfy the needs of plant making it is then not necessary to apply nitrogen fertilizer.

25. For Dr. Gerba. Would you answer how a 2-year-old gets a lung infection, if biosolids Class B is so great? The sludge was applied next to our property and within 2 weeks my 2-year-old got the adenovirus. Are you going to say he is 1 in 100 statistics to be part of the sludge progress?

Dr. Gerba noted the virus is a common respiratory infection among children. Trying to find a source for the virus is antidotal, you can not really prove the cause.

26. For Ms. Smith. You spoke of all the new studies the EPA will do on Endocrine Disrupters in biosolids. Will there be a report on this subject? If so, when will it come out?

Ms. Smith noted the research being done is looking for ways of managing a sewage treatment plant in a way that reduces the affluent concentrations of Endocrine Disrupters. In 2005, the EPA is under Court Order, there will be EPA approved methods for Endocrine Disrupters that are specifically designed for use in getting a new chemicals on board, however she is working with the State of California to implement some of the new tools that were not designed for the purpose for which they are being used. The areas being address relative to Endocrine Disrupters are in wastewater treatment plant management, and with concentrated animal feeding operations.

27. For Dr. Gerba. Please address relative risks to groundwater between biosolids and septic tank effluent in terms of viruses and bacteria. From biosolids what research is there on transport and from septic tanks what is transport potential in shallow groundwater?

Dr. Gerba noted basically viruses have a potential for contaminating ground water, but are tightly bound to biosolids, attempts to leach them off have failed. Wastewater viruses will migrate in the soil, for some reason viruses do not come off the biosolids. There is more potential for septic tanks contaminating ground water than biosolids, as studied in Florida.

28. For the Panel. How would Part 503 Risk Assessments change if metals,

organic compounds, and pathogens were considered in combination rather than separately?

Dr. Page noted it would be a statistical nightmare.

Dr. Gerber noted the risks are defined differently. The risk of pathogen is infection; the risk of toxic compounds is death. It is hard to equate the risks equally.

PUBLIC COMMENT

APPEARANCES BY JUNE GUIDOTTI, DR. CHLOE BOETTCHER, PAT STOKES, DAVE HEMPSTEAD, IRENE HEMPSTEAD, MICHAEL MORTENSEN, FRED KOGLER, JUNE ROWAN, CASANDRA DANA, ROBERT WEST AND BONNIE JONES

June Guidotti submitted a packet of information, incorporated herein by reference, that included several letters and reports regarding anaerobic composting. Ms. Guidotti requested an Environmental Impact Report (EIR) be done to protect our farmlands and wetlands from the ground up metal that is in the sludge, birth control residue from urine, and would like the Board to consider a study done by U.C. Davis and the studies submitted that takes the odors out of the sludge. Ms. Guidotti also mentioned burning of her throat, odors, flies, and the protection of the drinking water.

Dr. Chloe Boettcher noted documentation that is available on the Internet that refutes much of the information presented at this meeting. Additional background research is needed.

Pat Stokes spoke against the spreading of biosolids. If there is no danger, why are biosolids no longer dumped into the ocean? If spreading is not stopped it could be killing human life. Ms. Stokes submitted a report "Compact Power – Solutions to Waste", incorporated herein by reference.

Dave Hempstead asked why people have a right to dump poison next to his property? His property could be contaminated, and is now experiencing health problems. Mr. Hempstead noted frustration with the information being presented.

Irene Hempstead voiced concern regarding sludge trucks passing by their home 7 days a week 24 hours a day.

Michael Mortensen noted there are 2 sides to this issue, 2 areas of research with only one side being presented at this meeting. Mr. Mortenson expressed his frustration with the one sided presentation.

Fred Kogler submitted a report of the Rio Vista Water Quality Report done by Sierra Foothill Laboratory dated October 2002 and a report of "Potential Health Effects of Odor From Animal Operations. Wastewater Treatment, and Recycling of Byproducts" incorporated herein by reference.

June Rowan voiced concern with the high winds in the area, the highest asthma rate in California, and the threat to Rio Vista.

Casandra Dana noted her 2-year-old son became ill after dumping began within ½ mile of their home.

Robert West noted biosolids do not have to be spread on land, there are other methods that can be used, and the inconsistent contents of the biosolids being spread.

Bonnie Jones, San Francisco Public Utilities, submitted additional information addressing questions that had been posed at the previous meeting regarding biosolids.

ADJOURN - This meeting of the Board of Supervisors adjourned at 10:02 p.m.

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Duane Kromm, Chair

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Maggie Jimenez
Clerk to the Board of Supervisors