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EPA Region 9
January 6, 2010

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Schedule for Logistics and Meetings - January 6, 2010, 2009
SAB Science Integration for Decision Making Fact Finding Interviews
EPA Region 9
75 Hawthorne Street

8:15 am	EPA security: 1 st show id and perhaps metal detector; secure temporary Badge. Proceed to EPA receptionist and check in with him. He should have all names on his list.
8:30 am-9:00	Welcome and Introductions Science Team, Arizona Room, 1st Floor
9:00-10:00	Meeting with Regional Administrator, Deputy Regional Administrator, Air, Water, Superfund Division Directors, and Science Team, 18th Floor, Jane Diamond's office
10:00-10:30	Break
10:30-12:00 pm	Conversation with 7-10 managers, Arizona Room
12:00-1:30	Lunch off site with @2-4 Regional representatives
1:30-3:00	Conversation with 7-10 Regional staff scientists, Arizona Room
3:00	Wrap-up and goodbye

**SAB Science Integration for Decision Making Fact-Finding Interview
Meeting with Region 9 Regional Administrator and Deputy Regional Administrator and
Senior Managers
75 Hawthorne Street, San Francisco, California
Deputy Regional Administrator's Office
Call-in Number: 866-299-3188, access code 343-9981 and press the # sign
January 6, 2010, 9:00 - 10:00 a.m.
Draft Agenda**

Purpose of Interview: to help SAB Committee members learn about Region 9's current and recent experience with science integration supporting EPA decision making so that the SAB can develop advice to support and/or strengthen Agency science integration efforts.

1. Introductions facilitated by the SAB Staff Office
2. Discussion facilitated by SAB Members
 - Practices for integrating science to support decision making
 - Consideration of public, stakeholder, external scientific, and other input in science assessment
 - Drivers and impediments to implementing past recommendations for science integration
 - Ways program receives feedback on how science is used in decision-making
 - Workforce to support science integration for decision making
3. Identification of any follow-up actions

Planned participants

EPA Region 9

Mr. Jared Blumenfeld, Regional Administrator (possibly as an informal drop in)
Ms. Jane Diamond, Deputy Regional Administrator
Dr. Deborah Jordan, Director, Air Division
Ms. Alexis Strauss, Director, Water Division
Mr. Keith Takata, Director, Superfund Division

Dr. Eugenia McNaughton, Chief, Quality Assurance Office, Management and Technical Service Division (notetaker)

Dr. Winona Victory, Science Policy Advisor and Science Team Member (observer)

SAB Committee on Science Integration Committee Members

Dr. Gregory Biddinger, ExxonMobil Biomedical Sciences, Inc.
Dr. Lauren Zeise, California Environmental Protection Agency
Dr. Wayne Landis, Western Washington University (by telephone)
Dr. Barton J. Thompson, Stanford University (by telephone)

SAB Staff Office

Dr. Vanessa Vu, Director
Dr. Angela Nugent, Designated Federal Officer

**SAB Science Integration for Decision Making Fact-Finding Interview
Meeting with Region 9 Managers
75 Hawthorne Street, San Francisco, California
Arizona Room
Call-in Number: 866-299-3188, access code 343-9981 and press the # sign
January 6, 2010, 10:30 a.m. - 12:00 p.m.
Draft Agenda**

Purpose of Interview: to help SAB Committee members learn about Region 9's current and recent experience with science integration supporting EPA decision making so that the SAB can develop advice to support and/or strengthen Agency science integration efforts.

1. Introductions facilitated by the SAB Staff Office
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 - Ways program receives feedback on how science is used in decision-making
 - Workforce to support science integration for decision making
3. Identification of any follow-up actions

Planned participants

EPA Region 9

Mr. Steve Armann, Chief, Permitting and Corrective Programs, Waste Management Division
Dr. Harold A. Ball, Chief, Technical Support Section, Superfund Division
Ms. Brenda Bettencourt, Laboratory Director, Management and Technical Services Division
Mr. Kerry Drake, Associate Director, Air Division
Ms. Kathleen Goforth, Chief, Environmental Review Office, Communities and Ecosystems Division
Ms. Janet Hashimoto, Chief, Standards and TMDL Office, Water Division
Mr. Tom Huetteman, Associate Director, Waste Management Division
Ms. Cheryl Nelson, Chief, RCRA Facilities Management Office, Waste Management Division
Dr. Matthew Lakin, Acting Chief, Air Quality Analysis Office, Air Division
Ms. Corine Li, Chief, Drinking Water Office, Water Division
Mr. Ben Machol, Chief, Clean Energy and Climate Change Office, Air Division
Dr. Eugenia McNaughton
Dr. Lynn Suer, Chief, California Site Cleanup Section, Superfund Division
Dr. Winona Victory (notetaker)

SAB Committee on Science Integration Committee Members

Dr. Gregory Biddinger, ExxonMobil Biomedical Sciences, Inc.
Dr. Lauren Zeise, California Environmental Protection Agency
Dr. Wayne Landis, Western Washington University (by telephone)
Dr. Jill Lipoti, New Jersey Department of Environmental Protection (by telephone)
Dr. Barton J. Thompson, Stanford University (by telephone)

SAB Staff Office

Dr. Vanessa Vu, Director
Dr. Angela Nugent, Designated Federal Officer

Lunch, 12:00 – 1:30 p.m.

Informal discussion

SAB members and Staff

Regional Science Team

Ms. Loretta Barsamian, Deputy Director, Management and Technical Services Division, Deputy Assistant Regional Administrator and Science Team Member

Ms Brenda Bettencourt

Mr. Michael Gill, Superfund Technology ORD Liaison, Technical Support Office, Superfund Division and Science Team Member

Ms. Gail Morison, Environmental Scientist, Quality Assurance Office, Management & Technical Services Division and Science Team Member

Dr. Matthew C. Small, Regional Science Liaison and Science Team Member

Dr. Winona Victory

Dr. Eugenia McNaughton

**SAB Science Integration for Decision Making Fact-Finding Interview
Meeting with Region 9 Scientific and Technical Staff
75 Hawthorne Street, San Francisco, California
Arizona Room**

**Call-in Number: 866-299-3188, access code 343-9981 and press the # sign
January 6, 2010, 1:30 - 3:00 p.m.
Draft Agenda**

Purpose of Interview: to help SAB Committee members learn about Region 9's current and recent experience with science integration supporting EPA decision making so that the SAB can develop advice to support and/or strengthen Agency science integration efforts.

1. Introductions facilitated by the SAB Staff Office
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 - Practices for integrating science to support decision making
 - Consideration of public, stakeholder, external scientific, and other input in science assessment
 - Drivers and impediments to implementing past recommendations for science integration
 - Ways program receives feedback on how science is used in decision-making
 - Workforce to support science integration for decision making
3. Identification of any follow-up actions

Planned participants

EPA Region 9

Ms. Katherine Baylor, Hydrogeologist, Corrective Action Office, Waste Management Division

Dr. Debra L. Denton, Environmental Scientist, Monitoring and Assessment, Water Division

Mr. José García, Environmental Protection Specialist, Immediate Office, Communities and Ecosystem Division

Dr. Gerald Hiatt, Senior Risk Assessor, Technical Support Office, Superfund Division

Dr. Meredith Kurpius, Environmental Scientist, Air Quality Assessment Office, Water Division

Dr. Bruce Macler, National Microbial Risk Assessment Expert, Drinking Water Office, Water Division

Mr. Kevin Mayer, Environmental Engineer, CA Cleanup Site Section 2, Superfund Division

Mr. George Robin, Environmental Engineer, Underground Injection Control (UIC) Program, Ground Water Office, Water Division

Dr. Daniel Stralka, Environmental Scientist, Technical Support Office, Superfund Division

Mr. Max Weintraub, PCB Coordinator, Toxics Office, Communities & Ecosystems Division

Dr. Winona Victory

Dr. Patrick Wilson, Toxicologist, Corrective Action Office, Waste Management Division

Dr. Eugenia McNaughton (notetaker)

SAB Committee on Science Integration Committee Members

Dr. Gregory Biddinger, ExxonMobil Biomedical Sciences, Inc.

Dr. Lauren Zeise, California Environmental Protection Agency

Dr. Wayne Landis, Western Washington University (by telephone)

Dr. Jill Lipoti, New Jersey Department of Environmental Protection (by telephone)

Dr. Barton J. Thompson, Stanford University (by telephone)

SAB Staff Office

Dr. Vanessa Vu, Director

Dr. Angela Nugent, Designated Federal Officer



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 9

75 Hawthorne Street
San Francisco, CA 94105-3901

December 21, 2009

Memorandum

Subject: Preparatory materials for members of the SAB Committee on Science Integration visit to Region 9

To: Angela Nugent, Special Assistant/Designated Federal Officer
EPA Science Advisory Board Staff Office

From: Winona Victory and Eugenia McNaughton
Management and Technical Services, Region 9

Region 9 of the U.S. Environmental Protection Agency (EPA) is charged with protecting human health and the environment over a large and diverse area (Arizona, California, Hawaii, Nevada, American Samoa, Guam, and the Commonwealth of Northern Mariana Islands). The Region also works with environmental agencies in Asia, Mexico, and the Pacific Islands.

Our regulatory oversight in air, water, land, and waste extends to communities, ecosystems, environmental stewardship, rural areas, tribal lands, large cities, agriculture, fisheries, forests, mining, industry, shipping, and refineries. These are found in diverse environmental settings including deserts, forests, mountains, valleys, tropical islands, rain forests, bays, and coastlines.

Region 9 is fortunate to have a number of talented and motivated scientists on staff with expertise in a variety of disciplines. These scientists are supported by a Regional Science Council, with representatives from each Division, and a Regional Science Team composed of the Deputy Director of the Management and Technical Services Division, the Regional Laboratory Director, the Quality Assurance Office Manager, the Superfund and Technology Liaison (STL), the Regional Science Liaison (RSL), and two Science Policy Advisors.

Our goals for applying science to the regulatory decision-making process in Region 9 include:

- promoting the use of science to improve the regulatory process and achieve EPA's mission;
- "doing the right science" by identifying and addressing science priorities;
- "doing science right" by encouraging sound scientific practices; promoting scientific innovation;

- using data of appropriate quality in support of regional priorities and effective decision-making;
- partnering with our states, tribes, local governments, non-governmental organizations and academic institutions to promote common environmental goals; and
- collaborating with EPA ORD scientists on projects of regional and national interest.

Included with this memorandum are short biographies of the Senior Management Team, the managers, staff and science team with whom you will be meeting. There is a description of EPA Southwest Region, Region 9 and organization chart, several fact sheets describing science related activities and links to several products that were the result of scientific work initiated and completed by the Region in collaboration with our various partners.

Short Biographies of the Senior Management Team, the managers, science team, and staff

Region 9 Senior Management



Regional Administrator

Jared Blumenthal

The Regional Administrator (RA) is responsible for managing the Agency's regional activities under the direction of the EPA Administrator. The RA is tasked with ensuring that EPA's support of state, tribe and local government efforts to meet the environmental crises of today are rooted in three fundamental values: science-based policies and programs, adherence to the rule of law, and transparency.

As the Director of the San Francisco Department of Environment for the past 8 years, he was the primary environmental decision-maker for 28,000 city staff and a \$6.5 billion budget. He also managed the San Francisco Recreation and Parks Department which oversaw 242 world-class parks and recreational centers including Golden Gate Park, Candlestick Park, and Harding Park PGA golf course. He is a founder of Business Council on Climate Change, an organization that unites local businesses around the challenge of climate change. His varied experiences also include overseeing the Treasure Island Redevelopment Authority, leading the first United Nations World Environment Day hosted by the United States, directing international initiatives to protect 8 million acres of wildlife habitat and editing an annual report on international environmental case law at Cambridge University.

Jared received law degrees from the University of London and the University of California.



Acting Deputy Regional Administrator

Jane Diamond

Jane has been Acting Deputy RA for 9 months. Previously, she was Assistant RA and Director of the Management and Technical Services Division. In 2002, she was Acting Director of Superfund, after having been Deputy Director for three years. Jane started her EPA career in 1979, working in the RCRA and Superfund programs, and moved into management in 1988. She has managed U.S.-Mexico Border water and Southern California watershed programs, Superfund's Federal Facilities cleanups, and a hazardous waste enforcement section. Jane holds B.A. in Economics and Social Welfare from UC Berkeley.



Office of Public Affairs

Kathleen Johnson, Director

Kathleen has been OPA's Director since January, 2008. From 2004 to 2008, she was manager of Superfund's Federal Facility and Site Cleanup Branch. Kathleen started her EPA career in 1987 as a staff attorney in ORC. She was a section chief, and then a branch chief in ORC's Hazardous Waste Branch. In 2003, she went on a detail to HQ as Division Director of the Office of Site Remediation and Enforcement, part of the Office of Enforcement and Compliance Assurance (OECA).

Kathleen has a B.A. in Biology from Abilene Christian University, a J.D. from Baylor School of Law, and a M.P.H. from the University of Texas.



Air Division

Deborah (Debbie) Jordan, Director

Debbie has been Air Division Director since early 2004. Previously, she held several positions in the Air Division, including managing the operating permits and air toxics programs, and overseeing air quality in the Bay Area and Arizona. She also worked Superfund, overseeing

cleanups at DOD, DOE, and other sites. Debbie began her EPA career in 1989 after doing consulting work in chemical and process engineering. Debbie earned a B.S. and an M.S. in Chemical Engineering at the University of Kansas. She received her Ph.D. in Chemical Engineering from UC Berkeley in 1987.



Management and Technical Services Division
Nancy Lindsay, Acting Assistant RA

Before joining MTS Division in 2009, Nancy was Acting Director of the Waste Division from 2007 to 2008 and the Superfund Deputy Division Director from 2001 to 2007. Nancy started her career with Region 9 in 1983 as a Remedial Project Manager in Superfund. Since 1988, she has held management positions in Superfund, Water and Waste Management Divisions. Nancy worked a policy analyst on details in the Community and Ecosystems Division (Region 9) and Office of Solid Waste & Emergency Response (HQ). Nancy has a B.S. in Environmental Policy Analysis and Planning from UC Davis.



Communities and Ecosystems Division
Enrique Manzanilla, Director

Enrique has been CED Director since 1998. He oversees Region 9's lead region role on environmental justice and federal facilities. From 1996 to 1998, he was director of the Office of Public Affairs. Enrique began his EPA career at HQ in 1985. He served as Region 9's U.S.-Mexico Border Coordinator in 1991-1994, and was EPA's environmental attaché at the U.S. embassy in Mexico City from 1994 to 1996. In 2007, he took an SES sabbatical to work on sustainable bioenergy development with the U.N. Food and Agriculture Organization and then with the California Energy Commission.

He holds a B.S. in Biology from Pomona College, and a Master's in Marine Affairs from USC.



Waste Management Division
Jeffrey B. (Jeff) Scott, Director

Jeff has been Director of the Waste Management Division since 2000. During his tenure there, he has been on details as director of the Communities and Ecosystems Division and as director of EPA HQ's Office of International Environmental Policy in the Office of International Affairs. He started his EPA career in HQ in 1983, as an intern doing regulatory and cost-benefit analysis in the Office of Solid Waste.

Jeff has a B.A. in Economics and Social Ecology from UC Irvine and an M.A. in Public Policy from UC Berkeley.



Water Division
Alexis Strauss, Director

Alexis has been Director of the Water Division since 1994. She joined EPA as a Presidential Management Intern in 1979, and in the 1980s worked in the hazardous waste and Superfund programs, managing cleanups and enforcement for private sites and federal facilities. She served as Deputy Director of the Water Division in the early 1990s.

Alexis has a B.A. in Geography and a Master's Degree in Urban Planning from UCLA.



Superfund Division

Keith Takata, Director

Keith has been Director of Superfund since 1996. He started his EPA career as an attorney in Region 9's Enforcement Division, which combined the functions of ORC and various divisions' enforcement staff in the 1970s. He then went on assignment to the State of Hawaii, but came back to establish the Region's Superfund program in the early 1980s. Keith has served as Deputy Director of the Water Division and Chief of Staff for the RA. He has a B.A. from UC Berkeley and a J.D. from King Hall, the law school at UC Davis.

REGION 9 MANAGERS

Steve Armann

Chief, Permitting and Corrective Programs, Waste Management Division

Steve has been with EPA Region 9 since 1997. He has been a manager in the Waste Management Division's Permitting and Corrective programs since 2001. Prior to joining EPA, Steve was the Manager of Hawaii's Superfund program for five years.

Steve has a B.A. in Geography and an M.A. in Urban and Regional Planning from the University of Hawaii.

Harold A. Ball

Chief, Technical Support Section, Superfund Division

Harry manages the Technical Support Section, a group of scientists who provide direct technical support for Superfund projects in the fields of engineering, hydrogeology, ecology, and radiological, ecological, and human health risk assessment. Before joining the EPA in 1978, he worked for a San Francisco engineering consulting firm, overseeing the construction of wastewater treatment plants in the State of Nevada.

Harry holds a Ph.D. in Environmental Engineering from Stanford University.

Brenda Bettencourt

Laboratory Director, Management and Technical Services Division

Brenda Bettencourt has been the Director of the Region 9 Laboratory since it opened in 1993. She was the Chief of the Laboratory Support Section from 1987 to 1982. Her career at EPA started in 1984 in the laboratory completing various assignments including sampling and microbiology laboratory certification.

Brenda has a B.S. in Wildlife and Fisheries Biology at UC Davis and an M.B.A. from California State University East Bay.

Kerry Drake

Associate Director, Air Division

Kerry oversees air quality policy and programs for the San Joaquin and Sacramento Valleys in California and for the State of Hawaii. He is also the management lead for the West Coast Collaborative, agriculture air quality, and overarching permitting and enforcement issues. Kerry joined EPA Region 9 in 2002 after serving for more than a decade with the Texas Commission on Environmental Quality.

Kerry holds a B.S. in Aerospace Engineering from the University of Texas at Austin and is a licensed professional engineer in the State of Texas.

Kathleen Goforth**Chief, Environmental Review Office, Communities and Ecosystems Division**

Kathy's office is responsible for reviewing and commenting on Environmental Impact Statements.

She joined EPA Headquarters in 1984 first working in the Office of Toxic Substances, then in the Office of Water. In 1987, she transferred to Region 9, where she has experience working in every program division.

Kathy received a B.S. in Science and Environmental Change, with a concentration in Biology from the U of Wisconsin - Green Bay.

Janet Hashimoto**Chief, Standards and TMDL Office, Water Division**

Janet's office manages the TMDL, water quality standards, BEACH Act, monitoring, and assessment programs.

Janet began her EPA career in 1981 as an NPDES permit writer. She has also worked in underground injection control, ocean disposal, wastewater discharge, and stormwater programs. In 2008, she was an Embassy Science Fellow to Kolkata, India for three months, where she worked with the Kolkata Consulate to address potential climate change impacts.

Janet received a B.A. in Biology from UC Berkeley.

Tom Huetteman**Associate Director, Waste Management Division**

Tom has responsibility for the resource conservation and pollution prevention programs. He has been with EPA for over 23 years. Before taking his current position, he was Deputy Director of the Management and Technical Services Division, where he was the Region 9 management lead for science support. He has also been a manager in the Water and Superfund Divisions and worked in staff positions in Superfund, Air and Quality Assurance.

Tom has a B.S. in Natural Resource Management from the University of Michigan.

Cheryl Nelson**Chief, RCRA Facilities Management Office, Waste Management Division**

Cheryl oversees the implementation of the RCRA hazardous Waste and TSCA PCB Waste permitting programs. She has over 12 years experience as a hazardous waste regulatory environmental consultant for the private sector.

Cheryl holds a B.S. in Geology from SUNY Buffalo and an M.S. in Geology from San Jose State University.

Matthew Lakin**Acting Chief, Air Quality Analysis Office, Air Division**

In his current position, he oversees all of Region 9's air modeling, monitoring, GIS, and emissions inventory work.

In his regular position, he is a risk assessor in the Air Toxics, Radiation and Indoor Air Office. In both of these positions, his work includes: leading national efforts to perform community-based assessments of environmental impacts; designing the national health benefits tool for local diesel exhaust reduction projects; and overseeing regional work on incorporating good scientific data in resolving Exceptional Events Rule claims.

Matt has a Ph.D. in Atmospheric Chemistry from UC Irvine and was awarded EPA's Science Achievement Award in Environmental Economics (2009).

Corine Li**Chief, Drinking Water Office, Water Division**

Corine joined EPA in 1983 reviewing environmental impact statements and water quality monitoring plans. Shortly thereafter, she transferred to the Safe Drinking Water Act program, performing oversight of state delegated drinking water programs. She was promoted to her current position in 1999.

Corine has a B.S. in Civil Engineering from San Jose State University and is a Registered Civil Engineer with the State of California.

Ben Machol**Chief, Clean Energy and Climate Change Office, Air Division**

In his 19 years at the agency, Ben has been the Region's Senior Energy Advisor, and the Guam Program Manager. In Guam he oversaw EPA programs on the island and development of innovative infrastructure finance opportunities for U.S. island Territories. Ben spent several years working to develop water and wastewater infrastructure along the U.S.-Mexico border region.

Ben has a B.S. in Mechanical Engineering and an M.S. in Environmental Engineering, both from UC Berkeley. He is a licensed Professional Engineer.

Eugenia McNaughton**Chief, Quality Assurance Office, Management and Technical Services Division**

Eugenia McNaughton began her career at EPA Region 9 in the Quality Assurance Office in 1995. She moved to the Water Division to work on U.S.-Mexico border infrastructure projects, returning to the QAO as manager in 2005. She worked in an environmental consulting firm, an aquatic toxicology laboratory, and had a Fulbright research scholarship to Cyprus before joining the EPA. She is currently on the board of directors for the Northern California Chapter of the Society for Toxicology and Chemistry.

Eugenia holds a B.A. in Philosophy from Vassar College and a B.A. and Ph.D. in Biology from UC Santa Cruz.

Lynn Suer**Chief, California Site Cleanup Section, Superfund Division**

Lynn has oversees work on Superfund site clean ups in California. She joined EPA as a Superfund remedial project manager in 2003 and became a section chief in 2008. From 1988 to 2003 she monitored planning at California Water Quality Control Board, San Francisco Bay Region. Previously, she held a post-doctoral research fellowship (National Research Council) at EPA's Hatfield Marine Laboratory, worked as a Visiting Assistant Professor at Iowa State University and UC Berkeley and as a post-doctoral researcher in the Department of Civil Engineering, UC Berkeley.

Lynn received a B.A. in Zoology from UC Berkeley, an M.A. in Zoology from UC Davis, and a Ph.D. in Zoology at UC Davis with an emphasis in Marine Invertebrate Biology and Ecology.

REGION 9 SCIENCE TEAM**Loretta Barsamian****Deputy Director, Management and Technical Services Division, Deputy Assistant Regional Administrator**

Loretta serves as Region 9's Deputy Assistant Regional Administrator (Deputy ARA). She began her career with EPA Region 5 (Chicago) in 1972, joining Region 9 in 1976. She has worked in every program, leading the NEPA office, water quality planning, wetlands and oceans protection, drinking water permitting/enforcement, and directed two national estuary programs. Loretta had a long-term Intergovernmental Personnel Act (IPA) to the State of California in 1992, where she was the Executive Officer of the San Francisco Bay Regional Water Quality Control Board. She led surface and ground water quality planning, permitting and enforcement, superfund cleanups, and waste disposal compliance. Loretta returned to Region 9 as the Planning Director in MTSD, and then became Deputy ARA in MTSD.

Loretta has a BA in Psychology from Lawrence University.

Michael Gill**Superfund Technology ORD Liaison, Technical Support Office, Superfund Division**

Mike has been the Region 9 Superfund and Technology Liaison since 1998, providing technical support to the Superfund and RCRA programs. In recent years, he has worked in the areas of environmental applications and implications of nanomaterials, green remediation, and energy conservation at waste cleanup sites. Mike practiced electrical engineering in the 1980s with the US Navy, changing careers in 1992 to focus on environmental issues when he joined EPA.

Mike received his B.S. in Electrical Engineering from Northeastern University and his MSEE from Rensselaer Polytechnic Institute.

Gail Morison

Environmental Scientist, Quality Assurance Office, Management & Technical Services Division

Gail has been with the Region 9 Quality Assurance Office since early 1995. She serves as the Brownfields QA Liaison and lead document reviewer for the Brownfields program. Prior to joining EPA, she worked for an engineering consulting firm and for an environmental testing laboratory as an organic chemist.

Gail earned a B.S. in Chemistry and Agriculture at Cameron University and an M.S. in Pharmacology/Toxicology at the University of the Pacific.

Matthew C. Small, Regional Science Liaison

Matt is the Regional Science Liaison (RSL) for the Office of Research and Development (ORD) in EPA Region 9 (R9). As RSL, Matt works to facilitate communication, collaboration, and technical support between ORD and R9. He is one of the Region's hydrogeology experts, and led the effort to create national EPA OSWER directives and ASTM standards for remediation by natural attenuation. Matt spent five years in private consulting before joining EPA. Matt has a B.S. in Geology from CSU Hayward, an M. Eng. in Mineral Engineering and a Ph.D. in Civil and Environmental Engineering from UC Berkeley. He is also a licensed professional geologist in the State of California.

Winona Victory

Science Policy Advisor, Management and Technical Services (on detail to the Quality Assurance Office)

Winona is a point of contact for several national workgroups: the Science Policy Council Steering Committee, Regional Science Policy Forum, Climate Change + Health workgroup and Risk Assessment Forum. She came to Region 9 in 1990 as the ORD Regional Scientist. In 1992, she became a Region 9 science policy advisor. She helped start the Regional Science Council 10 years ago and continues as Co-chair.

Winona has a B.A. in Biology from Rice University, an M.S. in Reproductive Physiology from UW-Madison and Ph.D. in Physiology from UM-Ann Arbor. She is a Diplomate of the American Board of Toxicology.

Region 9 Staff

Katherine Baylor

Hydrogeologist, Corrective Action Office, Waste Management Division

Kathy is a hydrogeologist in the Waste Management Division. She provides technical support in hydrogeology, vapor intrusion, field sampling, laboratory data interpretation, and sample plan reviews to project managers in the Waste Management Division. Katherine spent her first four years at EPA working at the Region 9 Laboratory. Kathy holds a B.A. in Geological Sciences from UC Santa Barbara.

Debra L. Denton

Environmental Scientist, Monitoring and Assessment, Water Division

Debra is the TMDL EPA liaison for California Regional Water Quality Control Board, Central Valley Region and provides technical assistance for pesticide TMDL coordination. She coauthored the west coast marine toxicity test manual, published papers on Whole Effluent Toxicity (WET) statistical interpretation. Before coming to EPA, she monitored pesticides in the environment with the California Department of Food and Agriculture and developed state water quality standards at the CA State Water Resources Control Board.

Debra has a B.S. in Environmental Resources and Toxicology, an M.S. in Water Science and a Ph.D. in Hydrologic Sciences all from UC Davis.

José García**Environmental Protection Specialist, Immediate Office, Communities and Ecosystem Division**

José has been with EPA for 3½ years. He is currently Program Specialist for the U.S.-Mexico Border Program. He works with the US and Mexico team to administer the yearly Request for Proposals and serves as the liaison for the San Diego Border Office. José is the EPA point of contact on the Good Neighbor Advisory Board. Before joining the Border Program, José worked as a Community Involvement Coordinator in Superfund.

José received a B.A. in Political Science and Sociology from UC Santa Barbara and M.A. in Public Policy and Natural Resources and Environment from the University of Michigan.

Gerald Hiatt**Senior Risk Assessor, Technical Support Office, Superfund Division**

Gerry joined EPA in 1988 and has worked in: the Office of Health & Emergency Planning, the Office of the Regional Administrator and in the Superfund program. In these positions, he has served as expert witness, facilitator for workshops on risk assessment and risk communication, health & safety expert to the State of Nevada and Senior Risk Assessor and Toxicologist.

Gerry received his Ph.D. in Toxicology & Pharmacology from UC San Francisco.

Meredith Kurpius**Environmental Scientist, Air Quality Assessment Office, Water Division**

Meredith works on overseeing ambient air monitoring programs, and helps to coordinate climate change science issues. Projects she has worked on include local air toxics monitoring, characterization of coarse particulate matter in Southwest rural area, evaluation of the co-benefits of GHG and air pollutant mitigation strategies, and the impact of increased fire due to climate change on public health.

Meredith has a B.S. from Cornell University and a Ph.D. in Environmental Science, Policy, and Management from UC Berkeley.

Bruce Macler**National Microbial Risk Assessment Expert, Drinking Water Office, Water Division**

Bruce joined EPA in 1989. In addition to serving as a national expert, Bruce is the Drinking water security/emergency response coordinator and the water research investigator and coordinator. He participates in a number of state, national and international organizations that focus on drinking water issues. Before joining EPA, he was a National Research Council Associate at the National Aeronautics and Space Administration, Ames Research Center, an Assistant Research Botanist/ Lecturer in the Botany Department at UC Berkeley and an Assistant Research Professor, Marine Sciences Research Center, State University of New York at Stonybrook. Bruce has a B.A. and Ph.D. in Biochemistry from UC Berkeley.

Kevin Mayer**Environmental Engineer, CA Cleanup Site Section 2, Superfund Division**

Since 1990, Kevin has managed Superfund cleanup projects including several very large groundwater contamination sites in Southern California. In 1997 he became the Regional Coordinator for Perchlorate, a special project involving a rocket fuel component affecting the Colorado River, three Pacific Southwest states and numerous tribes. Kevin sits on the Executive Committee of the Interagency Perchlorate Steering Committee and is a chair of the Occurrence Subcommittee. Prior to his work at EPA, he worked in the water quality planning office of a public agency and as a hazardous waste consultant in the private sector.

Kevin received a B.A. from Rice University, an M.S. in Soil Science from the University of Washington and an M.S. in Environmental Engineering from Stanford University. He holds a Professional Engineering License in Civil Engineering from the State of California.

George Robin**Environmental Engineer, Underground Injection Control (UIC) Program, Ground Water Office, Water Division**

George has worked for EPA in Regions 6 and 9 for over 20 years. He participated in the creation and formation of the National UIC Technical Workgroup and the Region 9 Regional Science Council. George is a Regional Expert in the Region 9 UIC Program. His engineering career began with Union Oil Company. He worked in each of the three main career categories of Petroleum Engineering - Reservoir, Production and Drilling Engineering.

George has a B.S. in Petroleum Engineering from U of Louisiana at Lafayette and an M.A. in Art, Music and Journalism from U. of Texas at Tyler

Daniel Stralka**Environmental Scientist, Technical Support Office, Superfund Division**

Dan joined EPA in 1990 as a Superfund toxicologist working on sites from DOE Lawrence Livermore Laboratory and Navajo Abandoned Uranium mines to Edwards AFB and Pearl Harbor Naval Shipyard. He co-authored the Superfund Dermal Guidance, RAGS Part E, and is involved in the Superfund natural occurring asbestos technical working group. He participates at the national level in the dioxin review and fish consumption pathway evaluation workgroups.

Dan received his Ph.D. in 1984 from the University of Texas Health Science Center in Houston.

Max Weintraub**PCB Coordinator, Toxics Office, Communities & Ecosystems Division**

Max Weintraub has implemented PCB and lead-based paint programs under the Toxic Substances Control Act at EPA since 1997. He previously worked at the National Safety Council's Environmental Health Center and the Alliance to End Childhood Lead Poisoning. Max currently serves on the board of directors of the DataCenter and is a senior fellow of the Environmental Leadership Program. He founded the Environmental Justice and Health Union and served on the board of directors of Community Toolbox for Children's Environmental Health. He has written extensively about toxics and environmental justice issues.

Max received a B.A. in Biology from the UC Santa Cruz and an M.S. in Environmental Advocacy from the University of Michigan.

Patrick Wilson**Toxicologist, Corrective Action Office, Waste Management Division**

Patrick has oversight responsibility for all facets of toxicology and risk analysis for regional facilities and sites compliant with the Resource Conservation and Recovery Act (RCRA). As a member of the federal government's Regional Incident Coordination Team, he provided toxicological support for clean up of Department of Defense releases of weapons-grade plutonium, and chemical weapon clean up activities in the South Pacific. Patrick also served as the Region's technical principal in support of the TRW case, which resulted in the largest combined civil and criminal monetary penalties for a hazardous waste violation in the history of EPA.

Patrick holds a Ph.D. in Toxicology and an M.P.H. from UCLA.

Region 9 Organizational Overview

Regional Administrator: Jared Blumenfeld

Region 9's headquarters in San Francisco is organized into three offices:

- Office of the Regional Administrator (ORA)
- Office of Planning and Public Affairs (OPPA)
- Office of Regional Counsel (ORC)

and six divisions covering major program activities:

- Air Division
- Water Division
- Waste Management Division
- Superfund Division
- Communities and Ecosystems Division (CED)
- Management and Technical Services Division (MTS)

The Region has a Laboratory in Richmond, California, and small outreach offices in Los Angeles, San Diego and Honolulu.

Office of Public Affairs

Director: Kathleen Johnson

Associate Director: Julie Anderson

- Public Information / News Media Relations
- Regional Web site
- Congressional Liaisons
- Compliance Assurance Coordination
- Environmental Education
- Children's Health

Air Division

Director: Deborah Jordan

Acting Deputy Director: Elizabeth Adams

Associate Directors: Kerry Drake,

Colleen McKaughan, Amy Zimpfer

- Energy and Climate Change
- Planning
- Permits
- Rulemaking
- Enforcement
- Technical Support
- Radiation & Compliance Assurance
- Grants and Program Integration

Communities and Ecosystems Division

Director Enrique Manzanilla

Deputy: Frances Schultz

Associate Directors: Nathan Lau,

Katherine Taylor, Mike Bandrowski
(Acting)

- Agriculture
- Environmental Justice
- Environmental Stewardship
- Pesticides Office/FIFRA
- Tribal Programs
- Environmental Review/NEPA Review
- Pacific Islands
- Toxics Release Inventory

- Toxics/Lead/Asbestos

Office of Regional Counsel

Regional Counsel: Nancy Marvel
 Acting Deputy Branch Chief: Ann Nutt
 Branch Chiefs: Michael Hingerty, Nina Spiegelman

- Legal Counsel
- Civil & Criminal Enforcement
- Defensive Litigation
- Ethics

Management & Technical Services Division

Acting Director: Nancy Lindsay
 Deputy Director: Loretta Barsamian
 Branch Chiefs: Janie Thomas, Duane James

- Budget, Finance / Grants / Contracts
- Superfund Cost Accounting
- Science Policy
- Laboratory
- Quality Assurance
- Facilities
- Information Resource Management
- Health & Safety
- Human Resources
- Planning

Superfund Division

Director: Keith Takata
 Acting Deputy Director: Matt Haber
 Branch Chiefs: Kathleen Salyer, Michael Montgomery, Clancy Tenley

- Site Cleanup
- Brownfields
- Oil Pollution
- Federal Facilities & Base Closures
- Emergency Response & Planning
- Community Involvement
- Site Assessment

Waste Management Division

Director: Jeff Scott
 Deputy Director: Steven Barhite
 Associate Directors: Tom Huetteman, Arlene Kabei, Rich Vaille

- Pollution Prevention
- RCRA Permits/ Corrective Action
- RCRA Inspections & Enforcement
- RCRA State Program Development
- Underground Storage Tanks

Water Division

Director: Alexis Strauss
 Associate Directors: Karen Schwinn, John Kemmerer, Nancy Woo

- Clean Water Act
- Safe Drinking Water Act
- Marine Sanctuaries Act
- U.S./Mexico Border

Functional Statements for Offices and Divisions

Immediate Office of the Regional Administrator The Regional Administrator is responsible to the EPA Administrator within the boundaries of the Region and along the Region's U.S./Mexico Border for the execution of regional programs of the Agency and such other responsibilities as may be assigned. The Regional Administrator serves as the Administrator's principal representative in the region in contacts and relationships with federal, state, international, interstate, and local agencies, industry, academic institutions, and other public and private groups. The Regional Administrator is responsible for accomplishing national program objectives within the region as established by the Administrator, Deputy Administrator, Assistant Administrators, and the Directors of Headquarters Staff Offices; developing and implementing regional plans and programs for comprehensive and integrated environmental protection activities; managing regional resources, assuring implementation of the Region's Equal Employment Opportunity and External Compliance programs, translating technical program direction into effective regional operating programs; assuring that regional programs are executed efficiently, exercising approval authority for proposed state standards and implementation plans, exercising approval authority for administration of grant resources; and providing overall and specific evaluations of regional programs, both internal and external. The Immediate Office includes the Southern California Field Office and the Office of Civil Rights.

Southern California Field Office The Southern California Field Office (SCFO) plans, represents, and reports to the Regional Administrator on environmental programs in southern California (Ventura, Los Angeles, Orange, San Diego, and the western portions of Riverside and San Bernardino Counties), and provides leadership, coordination, and liaison with top officials in Southern California's many federal, state, local agencies and organizations. Staff assigned to the SCFO focus on achieving specific, regionally-assigned goals and objectives for the southern California region. The SCFO Director serves as the principal contact and representative of Region 9 in Southern California, and provides leadership, coordination, and liaison with top-level officials, including elected officials. The SCFO Director is responsible for strategic planning for Southern California environmental programs, advising the Regional and Deputy Regional Administrator and the Region's Senior Management Team. Each staff person in SCFO is supervised by the division/office in Region 9 that implements the corresponding program at the regional level. The SCFO Director provides administrative supervision to staff based in the field office from regional divisions/offices.

Office of Civil Rights The Office of Civil Rights (OCR) serves as the principal advisor to the Regional Administrator and Deputy Regional Administrator on all matters pertaining to civil rights, equal opportunity, and affirmative employment for minorities, women and disabled persons.

Office of Regional Counsel The Office of Regional Counsel (ORC) is responsible for providing legal advice and litigation support to the Regional Administrator, program divisions, staff offices and the Department of Justice.

Office of Planning and Public Affairs The Office of Planning and Public Affairs (OPPA) has primary responsibility for providing strategic planning, policy analysis and program evaluation services to the Region. It serves as the focal point for communication of Region 9's program activities and policies to its many and varied stakeholders, including the public; the media; state and local government; state legislatures and Governors' offices; Congress; the international community; the educational community; and special interest and non-governmental organizations. In addition, the office manages and coordinates enforcement and compliance assurance, and provides regional leadership for a variety of experimental or innovative programs, enforcement programs, and state partnerships. These services cut across media, organizational and functional lines and affect the direction and management of the Region.

Air Division The Air Division (AIR) is responsible for implementing the Clean Air Act (CAA) within Region 9. The division is charged with conducting all program activities except enforcement litigation activities which are cooperatively managed with the Office of Regional Counsel (ORC). Under this statute and in accordance with regulations and agency guidelines, the division ensures that air pollution does not constitute a threat to public health, safety, well-being and the environment. The division works with other federal agencies, state and local agencies, school districts and the university community, as well as, the private sector. The division administers grants to state and local agencies, issues permits and determines compliance with federal regulations.

Communities and Ecosystems Division The Communities and Ecosystems Division is responsible for providing leadership and direction on regional multimedia issues, emphasizing and promoting cross-program and place-based approaches to address regional environmental issues. The division develops and implements strategic direction to integrate cross-program issues within the region. It provides regional and national leadership on Agriculture Program issues, the Environmental Justice Program, and Federal Facilities Compliance Program activities. It manages and implements the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act for the region and provides regional and national leadership on tribal issues. The Toxic Substances Control Act (TSCA), Federal Insecticide, Fungicide, Rodenticide Act (FIFRA), Asbestos Hazard Emergency Response Action (AHERA), the Asbestos School Hazard Abatement Act (ASHAA) and the Food Quality Protection Act (FQPA) fall within its purview. The division provides assistance and direction to U.S. affiliated Pacific Island governments regarding environmental protection.

Management and Technical Services Division The Management and Technical Division (MTS) advises the Regional Administrator, Deputy Regional Administrator and senior

management on program planning and policy and technical, scientific and resource management issues. The division is responsible for regional infrastructure operations including budget, finance, grants, contracts, management control and integrity, facilities, human resources, and information resources. The region's quality assurance program, safety, health and environmental compliance program and the Region's laboratory (located in Richmond, CA) are located with MTS. The Regional Science Council, a forum for addressing cross-division science issues, is supported by MTS.

Superfund Division The Superfund Division (SFD) is responsible for implementing the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986, the Brownfields Initiative, the Emergency Planning and Community Right-to-Know Act (EPCRA), the Clean Air Act 112(r) and the Oil Pollution Act (OPA) within Region 9. The division is charged with conducting all activities for these programs, except enforcement litigation activities, which are cooperatively managed with the Office of Regional Counsel (ORC). Under the aforementioned acts and in accordance with implementing regulations and agency guidelines, the division ensures that hazardous wastes do not constitute a threat to public health, safety, well-being, and the environment. SFD works with other federal agencies, state and local agencies, and the private sector to correct uncontrolled hazardous waste site problems.

Waste Management Division The Waste Management Division (WST) is responsible for implementation of the Resource Conservation and Recovery Act (RCRA) statutes and amendments. This includes the broader range of activities regulated by the statute including hazardous waste (Subtitle C), non-hazardous waste (Subtitle D) and underground storage tank (Subtitle I). The division is charged with conducting all program activities except enforcement litigation activities, which are cooperatively managed with the Office of Regional Counsel (ORC). SFD Provides program-wide guidance to ensure proper interpretation and consistent application of federal regulations and statutes and coordinates the RCRA program with other media programs to promote division and Agency efficiency. It manages regional RCRA Waste Minimization and Pollution Prevention programs and establishes priorities for work with regional organizations.

Water Division The Water Division (WTR) is responsible for implementing the provisions of the Water Quality Act of 1987 (the Clean Water Act [CWA], as amended), the Safe Drinking Water Act (SDWA), as amended, and the Marine Protection, Research and Sanctuaries Act (MPRSA) within the geographic boundaries of Region 9. The division is charged with conducting all program activities except enforcement litigation activities, which are cooperatively managed with the Office of Regional Counsel (ORC) and program activities in the Pacific Islands, which are cooperatively managed with the Office of Pacific Islands in the Communities and Ecosystems Division. The division has the ultimate responsibility for assuring that the chemical, physical and biological integrity of the region's waters are restored and

maintained so that water pollution does not constitute a threat to public health, safety, well-being and the environment. In assuring compliance with the requirements of the CWA, as amended, SDWA, as amended, and the MPRSA, the division performs a wide variety of functions including providing grant assistance for the construction of municipal wastewater treatment facilities; protecting wetlands through implementation of Section 404 of the CWA; issuing permits for the discharge of wastewater effluent to surface waters; issuing permits for the discharge of wastes into underground injection wells; approving state-adopted water quality standards or developing federal standards; providing grant assistance for state water pollution control, drinking water, underground injection control and municipal wastewater treatment programs; and ensuring compliance with the CWA and SDWA by conducting inspections, providing technical assistance and pursuing enforcement actions.

U.S. Environmental Protection Agency

Region 9: The Pacific Southwest

Serving Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations



Region 9 2010 Priorities

Guiding Principles

- | | |
|--|--|
| <ul style="list-style-type: none">• Focus on achieving environmental results• Assure compliance through enforcement and assistance• Ensure environmental justice for all people in all aspects of our work• Promote transparency through effective use of emerging information management and communication tools | <ul style="list-style-type: none">• Ensure a strong workforce representative of the diverse populations we serve• Promote a green economy based on environmental stewardship and sustainability• Leverage federal, state and tribal partnerships• Promote innovation and collaboration• Use science and technology to address priorities |
|--|--|

Clean the Air

- Improve air quality in South Coast and San Joaquin, the areas of the country with the largest health burdens from air pollution, as well as the following high priority areas: Sacramento, CA; Phoenix, AZ; Clark County, NV; US/Mexico Border region
- Reduce emissions from on-road and non-road diesel sources along West Coast through West Coast Collaborative
- Increase public access to ambient air quality data
- Achieve air toxics reduction through monitoring programs and community-based projects which address environmental justice priorities
- Promote energy efficiency through clean energy, green building/Energy Star partnerships, and alternative fuels projects
- Provide leadership & initiate clean energy projects through Regional Energy & Climate Change Strategy
- Provide regional leadership to reduce environmental impacts from ports through collaboration and new technologies

Protect and Restore the Water

- Improve water quality, with priority focus on San Francisco Bay-Delta, Klamath and Lake Tahoe watersheds, via partnerships and integrated use of regulatory/voluntary approaches
- Reduce beach pollution from sewer overflows and stormwater
- Minimize losses of wetland acres through permitting and enforcement actions
- Improve state/local stormwater implementation
- Strengthen water quality and wetlands monitoring to assess waters
- Increase compliance with drinking water requirements to protect public health
- Improve drinking water and wastewater infrastructure through enforcement, innovative financing, and technical assistance

Promote Emergency Response Readiness

- Reduce and control risks posed by accidental and intentional releases of harmful substances
- Improve emergency response preparedness in support of the National Response Framework

Preserve and Restore the Land

- Promote resource conservation by emphasizing waste reduction, reuse, and recycling and preferable purchasing programs
- Assess, control and remediate contaminated sites
- Revitalize communities by facilitating clean up of properties for redevelopment and reuse
- Coordinate national implementation of the US/China strategy on hazardous waste

Foster Healthy Communities

- Assist other federal agencies in reducing significant threats to the environment through our National Environmental Policy Act authority
- Assist Tribes and Pacific Islands in addressing unmet public health and priority environmental needs, such as safe drinking water and wastewater infrastructure, and closure of solid waste open dumps
- Implement US/Mexico Border 2012 Plan to reduce pollution in air, water and on land; improve public health conditions (wastewater and drinking water); reduce exposure to chemicals
- Focus on San Joaquin Valley to attain measurable environmental results related to agriculture
- Build interagency partnerships to integrate environmental sustainability with the military expansion on Guam
- Work with partners to ensure meaningful community involvement and reduce cumulative environmental exposure in impacted communities
- Support development of green jobs and infrastructure through targeted funding, training and partnerships

Ensure Compliance and Enforcement

- Strategically target enforcement and compliance efforts to obtain public health benefits and deter non-compliance
- Promote solutions which go beyond compliance

Enhance Management and Accountability

- Support economic recovery through ARRA implementation
- Ensure effective, efficient utilization of EPA resources
- Be a model for sustainability in our internal operations and in implementing our programs

Science in U.S. EPA Region 9, the Pacific Southwest Region

The U.S. Environmental Protection Agency (EPA) Region 9 Pacific Southwest Region is charged with protecting human health and the environment over a large and diverse geography: Arizona, California, Hawaii, Nevada, American Samoa, Guam, and the Commonwealth of Northern Mariana Islands, and environmental settings: deserts, mountains, valleys, tropical islands, rain forests, bays, and coastlines. We also have environmental projects with Mexico, China and Vietnam. Our programs regulate all media: air, water, land and waste management. Region 9 staff work at community and ecosystem scales, promoting environmental stewardship in rural areas and large cities, among states, tribes and territories. Our programs interact with the wide range of industries found in the Region including agriculture, fisheries, forestry, high technology production, shipping, and refineries.

Science Resources in Region 9

Region 9 is fortunate to have a number of talented and motivated scientists on staff with expertise in a variety of disciplines. These scientists have a forum in the Regional Science Council, with representatives from each media division, and support from a Regional Science Team composed of the Deputy Associate Regional Administrator, the Regional Laboratory Director, the Quality Assurance Office Manager, the Superfund Technology Liaison (STL), the Regional Science Liaison (RSL), and two Science Policy Advisors.

Our goals for applying Science to the Regulatory Decision-Making Process in Region 9 include:

- Promoting the use of science to improve the regulatory process and achieve EPA's mission.
- "Doing the right science" by identifying and addressing science priorities.
- "Doing science right" by encouraging sound scientific practices.
- Promoting science innovation in the Region.
- Effectively using environmental data in support of regional priorities and effective decision-making.
- Partnering with our states and academic institutions based on common priorities and interests.

To accomplish these goals, we collaborate with the Office of Research and Development (ORD), federal agencies, states, tribes, and academic institutions.

Applying Science to the Regional Regulatory Decision-Making Process

The following list of example projects illustrate the application of science to the regulatory decision-making process in Region 9 (Please see attached project summaries, fact sheets, or internet links for more detail).

Air Division

- Dust Suppressants and Water Quality
Final report - <http://www.epa.gov/region09/air/dust/DustSuppressants-sept2008.pdf>
- Region 9: Assessing Outdoor Air Near Schools
Press releases and currently available data - <http://www.epa.gov/region09/air/schools-monitor/index.html>
- Using Technology to Assess Air Quality in the San Joaquin Valley
<http://www.epa.gov/region09/air/features/nasa-airsampling.html>

Water Division

- Analysis of dioxin-like compound in fish tissue from San Francisco Bay
<http://www.epa.gov/region09/water/dioxin/fishtissue.pdf>
- Terminal Island Renewable Energy, Underground Injection Control Demonstration Project
http://www.lacitysan.org/biosolidsems/downloads/program_performance/Biosolids_EMS_Report_May09.pdf

Waste Management Division

- Turning Food Waste into Energy at the East Bay Municipal Utility District (EBMUD)
<http://www.epa.gov/region09/waste/features/foodtoenergy/index.html>
<http://www.epa.gov/region09/waste/organics/ad/EBMUDFactSheet.pdf>

Superfund Division

- Smart Energy Resources Guide (SERG): A Resource for Greener Remediation
SERG Resource Guide - www.epa.gov/nrmrl/pubs/600r08049/600r08049.htm
- Naturally Occurring Asbestos: Clear Creek Management Area
<http://www.epa.gov/region09/toxic/noa/clearcreek/index.html>
- Perchlorate in the Pacific Southwest
<http://www.epa.gov/region09/toxic/perchlorate/index.html>

Communities and Ecosystems Division (CED)

- Collection of Pyrethroids in Water and Sediment Matrices: Development and Validation of a Standard USGS report - <http://pubs.usgs.gov/sir/2009/5012/>

Management and Technical Services Division (MTS)

- Climate Change 101 (see attached fact sheet)
- Climate Change Speaker Series (see attached fact sheet)



RARE Project Summary (DRAFT)

Dust Suppressants and Water Quality

USING SCIENCE TO MAKE A DIFFERENCE IN U.S. EPA REGION 9, THE PACIFIC SOUTHWEST REGION

Regional Applied Research Effort Testing of Dust Suppressants for Water Quality Impacts

The use of dust suppressants not only enhances dust control but can also significantly reduce the amount of water needed to effectively control dust. However, application of dust suppressants could also negatively impact the quality of underground water and surface water bodies through infiltration or storm water runoff.



AZ (left) and NV (right) soil columns before and after product application.

The purpose of this research was to identify dust suppressant products with minimal to

no adverse impacts on water quality and aquatic life relative to use of water alone. Simulated stormwater runoff from small-scale

soil plots treated with six dust suppressant products was evaluated for water quality and aquatic toxicity. The study also evaluated the quality of water leached through soils treated with dust suppressant products. The study design replicated, to the extent possible, conditions under which dust suppressants are typically applied at construction sites in desert climates.



Treated Arizona Soil Trays Under Heat Lamps.

Dust suppressant products tested included:

- Chem-Loc 101 (surfactant)
- Enviro RoadMoisture 2.5 (surfactant)
- Durasoil (synthetic organic)
- Jet-Dry (surfactant)
- Haul Road Dust Control (surfactant)
- EnviroKleen (synthetic polymer)

Overall, water quality results for the dust suppressant products were favorable and generally minimal, showing concentrations similar to water-only control tests on untreated soils for the majority of parameters evaluated. However, this study is not a substitute for site-specific monitoring of dust suppressant impacts and results should not be applied to products that were not tested.

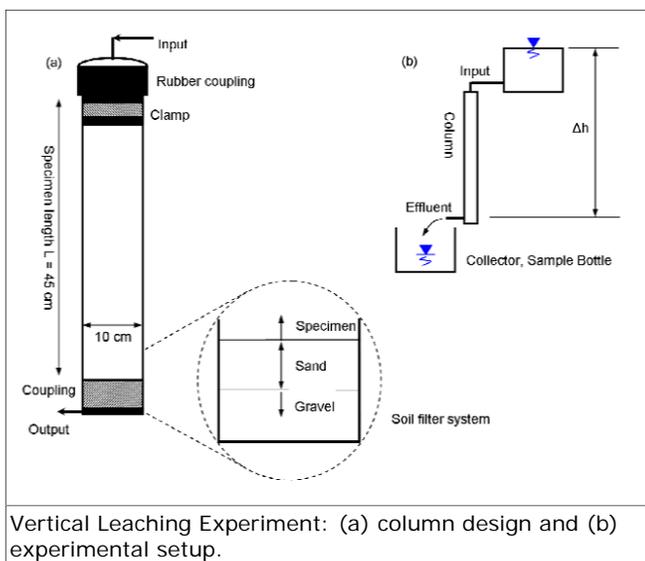
Regional Scientists: Karen Irwin and Peter Husby

ORD Scientists: David Reisman, National Risk Management Research Laboratory, Cincinnati, OH

Partners: Edward Beighley, San Diego State University, Clark County Department of Air Quality & Environmental Management, Las Vegas, NV, Maricopa County Air Quality Department (AQD), Phoenix, AZ, Environmental Quality Management, Inc.

Summary Report: <http://www.epa.gov/region09/air/dust/DustSuppressants-sept2008.pdf>

DRAFT, RARE Dust Supp.pub 8/10/09 ms



— Administrator Lisa P. Jackson

National Press Release

Regional Press Release

On this page:

- [What is EPA's School Air Toxics Monitoring Initiative?](#)
- [How Many Schools Will Be Monitored Under This Initiative?](#)
- [How Did EPA Decide Which Schools To Monitor?](#)
- [Which Schools Will EPA Be Monitoring in Region 9?](#)
- [Why Isn't My School On the List of Schools for Monitoring?](#)
- [What Can Schools Do to Improve Air Quality?](#)
- [Other Frequently Asked Questions \(FAQs\)](#)
- [For More Information](#)

What is EPA's School Air Toxics Monitoring Initiative?



As part of a new air toxics monitoring initiative, EPA, state and local air pollution control agencies will monitor the outdoor air around schools for pollutants known as toxic air pollutants, or air toxics. The Clean Air Act includes a list of 187 of these pollutants. Air toxics are of potential concern because exposure to high levels of these pollutants over many decades could result in long-term health effects.

EPA selected schools after evaluating a number of factors including results from an EPA computer modeling analysis, the mix of pollution sources near the schools, results from an analysis conducted for a recent newspaper series on air toxics at schools, and information from state and local air pollution agencies.

EPA, and our state, local and tribal air pollution control partners are:

- collect samples of outdoor air near selected schools over 60 days,
- analyze those samples for air toxics of potential concern,
- report on levels of air toxics found and their potential for long-term health impacts,
- evaluate actions that may be needed to reduce levels of pollutants of concern, and
- take action as needed to ensure that nearby industries are in compliance with clean air regulations.

This web site provides information on this initiative in EPA's Pacific Southwest Region (Region 9). For additional information, please [visit the national Web site](#).

How Many Schools Will Be Monitored Under This Initiative?

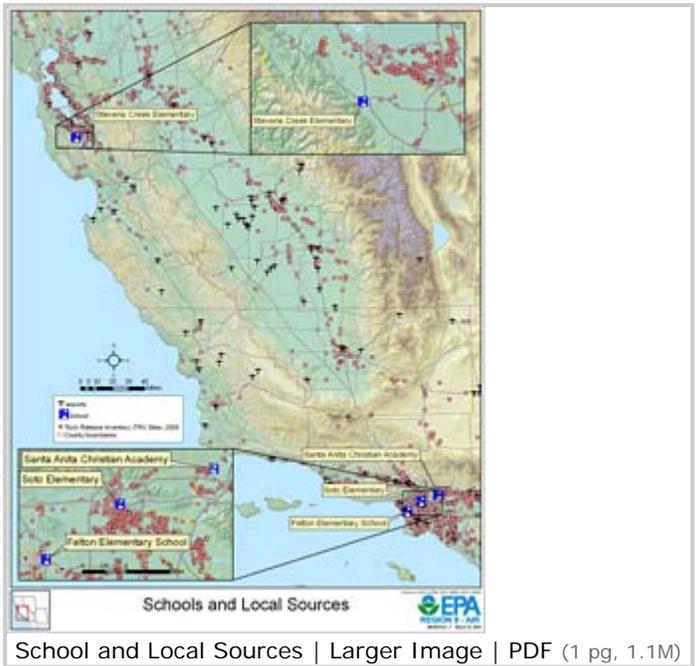
The initial monitoring will take place at 62 schools in 22 states. If your school is not on the initial list of schools to be monitored, it does not mean it might not be monitored in the future. We will use what we learn from the initial round of monitoring to help us determine whether we may need to conduct additional monitoring.

How Did EPA Decide Which Schools To Monitor?

EPA identified schools for monitoring based on the best data available to us about air

pollution in the vicinity of the school, information about wind direction and speed, results of a computer modeling analysis, results from a [recent newspaper analysis](#), [EXIT EPA](#) and information from state and local air agencies.

Which Schools Will EPA Be Monitoring in Region 9?



EPA Region 9, in partnership with the [Bay Area Air Quality Management District](#) [EXIT EPA](#) and the [South Coast Air Quality Management District](#) [EXIT EPA](#), will initially be monitoring at the following school locations. Please click on the school name for information regarding the monitoring efforts at each school, and on the name of the pollutant(s) for additional information.

School Name	City	State	Pollutant(s) to be monitored*
Felton Elementary School	Lennox	CA	Metals in TSP, PAH, VOC
Santa Anita Christian Academy	El Monte	CA	Metals in TSP, PAH, VOCs
Soto Street Elementary School	Los Angeles	CA	Metals in TSP, PAH, VOCs
Stevens Creek Elementary School	Cupertino	CA	Cr+6 EXIT EPA

- * Pollutants to be measured have been selected based on emission sources in the vicinity of each school.
- **Cr+6:** Hexavalent chromium
 - **Metals in TSP:** Toxic metals contained in total suspended particulate matter (e.g., lead, nickel and manganese).
 - **PAH:** Polycyclic Aromatic Hydrocarbons (e.g., naphthalene, benzo(a)pyrene).
 - **VOC:** Volatile Organic Compounds (e.g., benzene, vinyl chloride).

Note: The groups of chemicals identified for each school as "pollutants to be monitored" include both the specific individual pollutants within the group that our current information indicates may be present at each school at levels of potential concern (i.e., the "driver pollutants") and some other pollutants that can be inexpensively measured at the same time. While we will be analyzing air samples for both sets of pollutants in each chemical group and will review all the data in drawing conclusions for each school, we intend to focus our data analysis activities primarily on the

individual "driver pollutants".

For information on all schools being monitored nationwide, please refer to the [Assessing Outdoor Air Near Schools Web site](#).

Why Isn't My School On the List of Schools for Monitoring?

EPA is going to start by monitoring at 62 priority schools in 22 states near large industrial facilities and in some urban areas. If your school is not on the initial list of schools to be monitored, it does not mean it might not be monitored in the future. We will use what we learn from the initial round of monitoring to help us determine whether we may need to conduct additional monitoring.

EPA Region 9 received a significant number of inquiries about monitoring schools in West Berkeley and Bayview/Hunters Point in San Francisco. EPA has prepared responses to these inquiries, which can be viewed below:

- [Letter to West Berkeley Residents \(PDF\)](#) (2 pp, 24K)
- [Letter to Bayview-Hunters Point Residents \(PDF\)](#) (2 pp, 23K)

What Can Schools Do to Improve Air Quality?

The air children breathe impacts their health. People exposed to toxic air pollutants at sufficient concentrations and durations may have an increased chance of health problems including damage to the immune system, and neurological, developmental, respiratory and other health problems including cancer. In some cases, children may be more vulnerable to these health effects than adults because:

1. their bodies are still developing; and
2. their behavior can expose them to more chemicals.

Learn more about children's health issues

In addition to assessing outdoor air near schools, [EPA has several existing programs](#) that take action to help make the air in and around schools safer for children to breathe:

Indoor levels of air pollutants can be two to five times higher than outdoor levels. Sources of poor indoor air quality in schools range from inadequate ventilation systems to fumes from pesticides and cleaning agents. More than half of the nation's schools are implementing indoor air quality management programs, most of which are based on [EPA's Tools for Schools Program](#), which helps schools identify, resolve and prevent indoor air quality problems using low- and no-cost measures.

EPA launched the [Clean School Bus USA Program](#) in 2003 to address the condition of America's aging school bus fleet and the health effects that result from exposure to diesel exhaust emitted by idling school buses. EPA has provided grants to many school districts to fund the replacement of old school buses with new buses that use cleaner fuels.

EPA's [Healthy School Environments web site](#) is a "one-stop shop" for resources and information on topics related to environmental health and safety in schools.

EPA is also taking action to be sure that levels of lead, ozone, and fine particle pollution in

the air protect children's health. Learn more about each:

1. [Lead](#)
2. [Ozone](#)
3. [Particle pollution](#)

Other Frequently Asked Questions (FAQs)

- [National Outdoor Air Near Schools FAQs](#)

For More Information

If you have questions or need additional information about the School Air Toxics Monitoring Initiative in Region 9, you can email R9schoolmonitoring@epa.gov, or call Michael Bandrowski, Chief of the Air Toxics, Radiation, and Indoor Air Office at EPA, Region 9, at (415) 947-4194.



<http://www.epa.gov/region09/air/features/nasa-airsampling.html>

Last updated on Tuesday, June 3rd, 2008.

Region 9: Air Programs

You are here: [EPA Home](#) [Region 9](#) [Air Programs](#) [Feature Stories](#) Using Technology to Assess Air Quality in the San Joaquin Valley

Using Technology to Assess Air Quality in the San Joaquin Valley



View [this short video](#) for more information about the San Joaquin Valley air quality assessment project.

Technical information on this page:

- [Graphic of NASA's satellite support of air sampling](#)
- [Graphic depiction of aerial data gathered.](#)

It may sound like fiction - NASA pilots, EPA scientists, lidar instruments, and an airplane flying back and forth over the San Joaquin Valley - but it is a fact.

Last week, in an effort to better understand how particulate matter pollution is formed, EPA teamed up with NASA scientists to bring advanced monitoring technology to the valley.

Air pollution is easily trapped inside a valley and the San Joaquin Valley is long, low, and surrounded by mountains on three sides. The recent population boom, busy highways, and other sources of pollution have combined with the natural topography to create some of the highest concentrations of fine particulate pollution in the country. Improving the valley's air for the 3.3 million people who live there is a priority for EPA.

The plane that flew over the valley was equipped with lidar, an advanced monitoring instrument from NASA that makes unique aerosol (particulate matter) measurements. These measurements give a downward snapshot of the entire aerosol that is in the atmosphere. (See the graphic below.) The measurements are useful for assessing the sources and transport of the aerosol.

The data gathered during the flights can help us better understand the underlying science of particulate matter pollution and help the San Joaquin Valley Air Pollution Control District develop more informed air quality plans. EPA will continue to work with the California Air Resources Board and the SJV APCD, as we strive toward the same goal - cleaner air for the valley residents.



Particulate pollution in the San Joaquin Valley



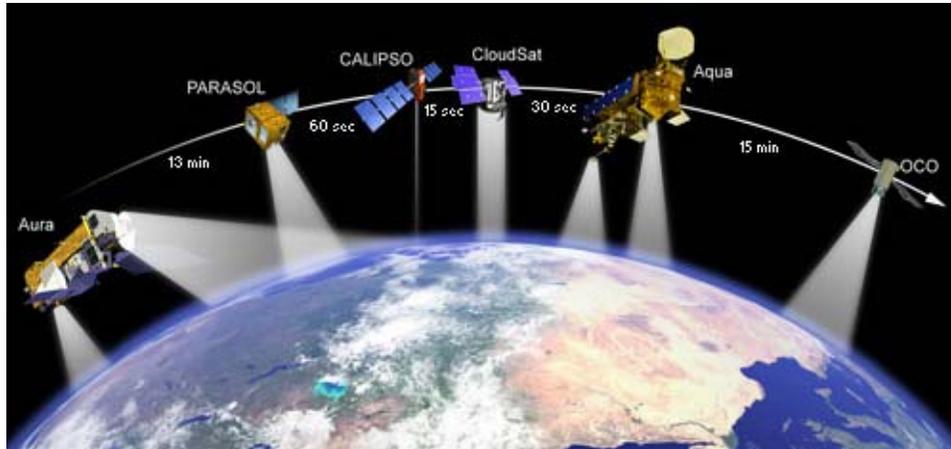
Air monitoring equipment (lidar) aboard the NASA Study plane



Aerial photo of San Joaquin Valley, from NASA study plane

How NASA's Satellites Helped with Air Sampling

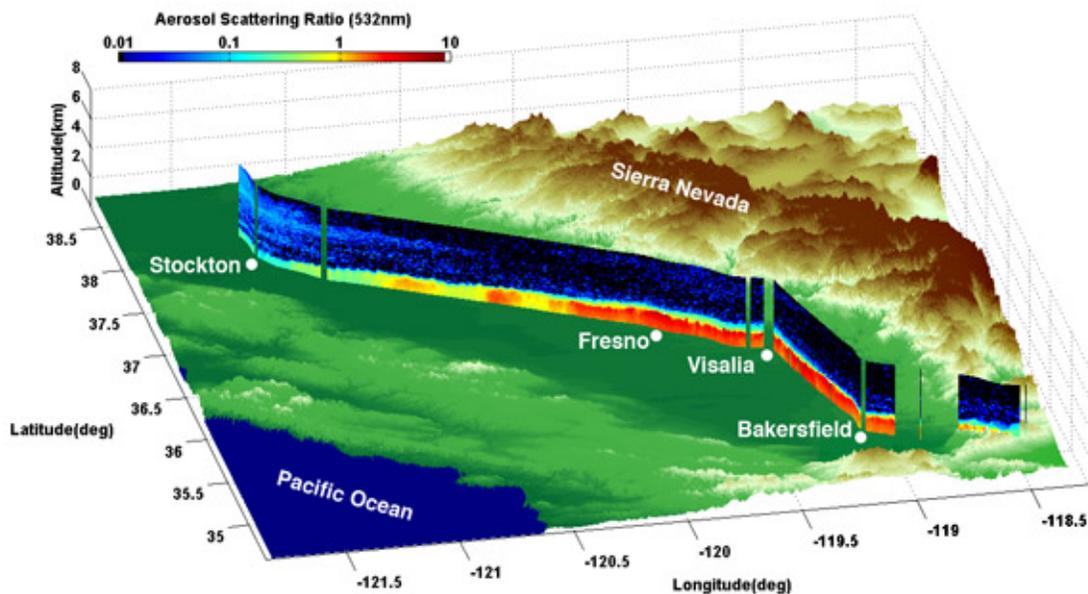
Graphic courtesy of NASA; Visit [NASA's A-Train site](http://www.nasa.gov/a-train) for more information



This graphic depicts several of NASA's satellites flying in formation high above the earth's surface. The NASA flights were timed to overlap with the Aqua satellite (shown here as second from right) overpass above San Joaquin Valley, which takes place daily at 1:30pm local time. Researchers will use the aircraft's aerosol measurements as a vertical link between aerosol data from the Aqua satellite and ground-based measurements of PM-2.5 to demonstrate the utility of satellite data for measuring surface air quality.

High Spectral Resolution Lidar Aerosol Vertical Profile Data

Graphic courtesy of NASA Langley Research Center



High Spectral Resolution Lidar (HSRL) aerosol vertical profile acquired between 14:00 and 15:00 PST on Feb. 15 2007 as the NASA Langley King Air B200 aircraft flew north over the eastern San Joaquin Valley. This image shows one of the parameters measured by the HSRL, the aerosol scattering ratio, and demonstrates that the aerosols were mostly confined to the southern part of the Valley and below 1.5km. Note: This data is preliminary and has not yet been finalized.

Contact Information

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FACT SHEET

Analysis of dioxin-like compound in fish tissue from San Francisco Bay

In the summer of 2000, the USEPA Region 9 coordinated with the San Francisco Estuary Institute (SFEI) to fund the analysis of dioxins and dioxin-like compounds (furans and co-planar PCBs) in fish collected as part of the Regional Monitoring Program. Samples were collected from six areas from within the Bay: the South Bay, Oakland, San Leandro Bay, San Francisco Waterfront, Berkeley, and San Pablo Bay.

Thirty-two fish composites were analyzed for dioxins, furans and co-planar PCBs (PCB-77, PCB-126, PCB-169) with High Resolution Mass Spectrometry by the Department of Toxic Substances Control Lab in Berkeley CA. The other dioxin-like PCBs (105, 114, 118, 156, 157 and 189) were measured by a California Department of Fish and Game Laboratory in Rancho Cordova, CA.

The potency of PCBs, dioxins and furans has been assessed by the World Health Organization (1998) and the combined potency of a sample is expressed as a Toxic Equivalency Quotient (TEQ in pg/g). The dioxin toxic equivalents resulting from dioxins and furans alone are expressed as ITEQs. The TEQ and ITEQ were compared to screening level concentration of 0.3 pg/g. A screening value is a concentration of a target analyte in fish tissue that is of potential public health concern. Exceedance of screening value is an indication that more intensive site-specific monitoring and/or evaluation of human health risk should be conducted.

Median TEQ and ITEQ for fish composite samples collected in SF Bay 2000 Species

Species	Number of composites	Number of fish per composite	TEQ _{DF} (dioxins and furans)	TEQ _{DFP} (dioxins, furans, and PCBs)
White croaker	14	5	1.6	6.7
Shiner surfperch	8	20	1.4	6.4
Striped bass	9	3	0.2	1.2
Jacksmelt	1	5	0.2	NA

Approximately 80% of total TEQ in fish tissues is due to PCBs. PCB-126, the most potent dioxin-like congener, contributed an average of 49% to the total TEQ. The dioxins and furans contributed about 20% of the TEQ. These were primarily associated with four compounds: 2,3,4,7,8-PCDF, 2,3,7,8-TCDF, 2,3,7,8-TCDD, 1,2,3,7,8-PCDD. Based on the TEQ data three fish species had median concentrations above the screening level of 0.3 pg/g. The ITEQ is more equivocal. All white croaker (n = 14) and shiner surfperch (n = 8) samples were above the screening level of 0.3 pg/g. On the other hand, all striped bass (n = 9) and the jacksmelt (n = 1) were below the screening level of 0.3 pg/g.

The results are similar to those found in the previous RMP survey conducted in 1997. Most of the TEQ is due to the co-planar PCBs. However, dioxins alone are higher than screening levels in some fish. This study provided data on two Bay species (shiner surfperch and jacksmelt) that had not been previously analyzed for dioxins.

BIOSOLIDS

2008
Performance Report

Environmental Management System

The City of Los Angeles processes, recycles and renews 159 billion gallons of wastewater produced annually by more than four million residents. Twenty one billion gallons of this wastewater is used as recycled water for beneficial water-conservation purposes. Two hundred and fifty six thousand tons of biosolids are fully recycled and are treated as a valuable commodity. The City managed 92% of its biosolids as fertilizer, and 8% as compost.

Terminal Island Renewable Energy (T.I.R.E.) Project Start Up



In April 2007, the City of Los Angeles and Terralog Technologies Inc. began construction for the Terminal Island Renewable Energy (TIRE) project. Two wells were drilled and injection equipment was initially installed. The start-up phase commenced in June 2008, and the equipment was tested with brine and effluent from the Terminal Island Water Reclamation Plant. In August 2008, the City injected the first biosolids from Hyperion Treatment Plant and Terminal Island Water Reclamation Plant. The biosolids were injected successfully and the well accepted the material. In October 2008, the TIRE project reached its first permit milestone: the successful demonstration of biosolids injectivity and the review of well formation response. This milestone was accomplished 35 days ahead of schedule. Currently, approximately 150 wet tons of biosolids are injected 5 days a week.

Daily monitoring and measurement are conducted on the project. A Technical Advisory Committee (TAC) monitors the project operations and analyzes the well response data. The committee includes the U.S. Environmental Protection Agency; Office of Groundwater Protection; Underground Injection Control and Biosolids Management; Department of Energy; California Institute of Technology (CalTech); US Geological Survey; Lawrence Berkeley National Lab and California Division of Oil; and Gas and Geothermal. Based on review of the data and monitoring by the TAC, the results show that the well has responded soundly to the injection and the material is contained vertically.

Extensive outreach efforts were provided for the TIRE project. To date, over 60 presentations, including tours, have been given. As a result of the City's efforts, the TIRE outreach program was recognized by the National Association of Clean Water Agencies for its environmental leadership in providing an effective public outreach and education program for TIRE.

The City has seen several environmental benefits during the start-up phase of the TIRE project:

1. Reduction in air emissions and green-house gases due to a decrease in truck traffic.
2. Reduction in the number of trucks transporting the material to management options outside of the Los Angeles basin from 14 per week to an average of 4 per week.
3. Met permit and regulatory requirements thus far, resulting in protection of groundwater, improved air quality, and odor free operations.

Our Accomplishments

The City continually improves its program each year by accomplishing goals and objectives set. The table below lists some accomplishments the City achieved in FY 07-08.

Accomplishments	Outcomes
Maintained compliance with Kern County Class A ordinance after passage of Measure E and successful ruling on lawsuit against ban on the importation of Biosolids. (Goal)	Regulatory Compliance, Environmental Performance
Included routine site visits to Griffith Park Composting Facility, Terminal Island Water Reclamation Plant, and the Green Acres Farm as part of the Hyperion Solids Operator station post training to enhance the current training program. (Objective)	Quality Management Practices
Upgraded and updated the Biosolids EMS website. Included Survey feedback (Goal)	Relations with Interested parties
Provided information to interested parties, public, and news media through interviews, tours, presentations, and website regarding the Terminal Island Renewable Energy project (deep well injection of biosolids) The public outreach/education element of the project received an environmental award from National Association of Clean Water Agencies (NACWA). (Objective)	Relations with Interested parties
Maintained record of no-odor complaints at Green Acres and Griffith Park Compost facility by following best management practices for off-loading, applying, and beneficially using the biosolids. (Goal)	Regulatory Compliance, Environmental Performance, Quality Management Practices, Relations with Interested parties
Received California & Arizona ELAP re-certification of laboratory.	Quality Management Practices, Relations with Interested parties, Regulatory Compliance



Region 9: Waste Programs

You are here: [EPA Home](#) [Region 9](#) [Waste](#) Food to Energy

Turning Food Waste into Energy at the East Bay Municipal Utility District (EBMUD)

- [EBMUD Project Home](#)
- [Food Waste](#)
- [Food Waste at Wastewater Facilities](#)
- [EBMUD's Process](#)
- [EBMUD Study](#)

EBMUD Helps Mitigate Climate Change Through Anaerobic Digestion

Fact: Food Waste Contributes to Climate Change

Food waste is one of the least recovered materials in the municipal solid waste stream and is one of the most important materials to divert from landfills. Food that is disposed of in landfills decomposes to create methane, a potent greenhouse gas that contributes to climate change.

- [More about the importance of diverting food waste from landfills](#)

Fact: Food Waste Can Be Transformed Into A Natural Fertilizer

Of the less than 3% of food waste recovered from the waste stream, composting is the prominent diversion method. Composting, either in your backyard or in a commercial facility, creates a natural fertilizer with many beneficial qualities.

- [More information on composting](#)

Fact: Food Waste Can Be Used to Generate Renewable Energy

In order to decrease food waste and mitigate climate change, East Bay Municipal Utility District (EBMUD) is pioneering an innovative method of reducing the amount of food waste reaching landfills while simultaneously producing renewable energy.

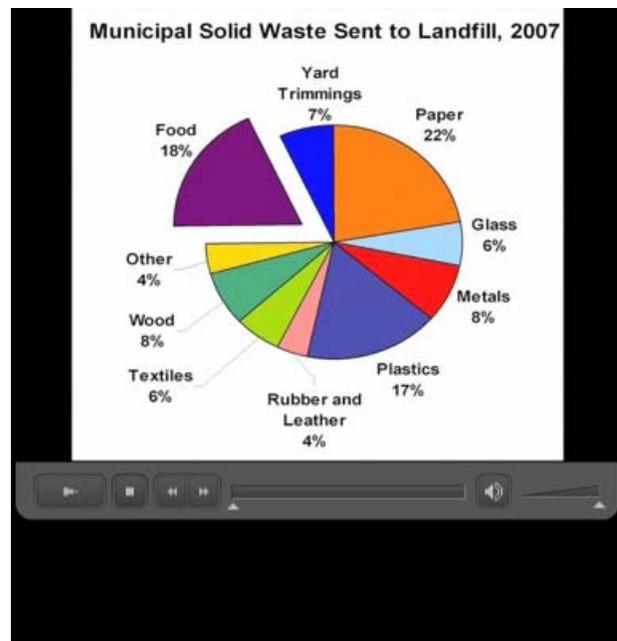


This food waste can be anaerobically digested for energy value and landfill diversion.

In Oakland, California, EBMUD's main wastewater treatment plant was the first sewage treatment facility in the nation to convert post-consumer food scraps to energy via anaerobic digestion. Waste haulers collect post-consumer food waste from local

restaurants and markets and take it to EBMUD. In an anaerobic digester, bacteria break down the food waste and release methane as a byproduct. EBMUD then captures the methane and uses it as a renewable source of energy to power the treatment plant. After the

Watch Anaerobic Digestion Video Below



Join the Discussion

Greenversations Question:
[How do you handle food waste?](#)

Share your thoughts, follow the story, see more photos



National Information Food Scraps Web Site

- Basic Information - Learn why food waste disposal is a problem and what's currently being done about it.
- Food Waste Recovery Hierarchy - EPA's food waste diversion hierarchy and learn how to recover and reduce surplus food and food waste.
- Generators - Learn about food waste management options for large-scale generators and for households.
- Success Stories - Learn how some

digestion process, the leftover material can be composted and used as a natural fertilizer.

If 50% of the food waste generated each year in the U.S. was anaerobically digested, enough electricity would be generated to power over 2.5 million homes for a year.

- [More information on anaerobically digesting food at wastewater treatment facilities](#)



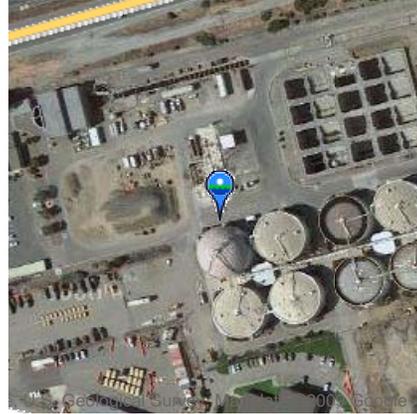
Anaerobic digesters at EBMUD Wastewater Treatment Plant. Photo courtesy of EBMUD.

To further study this technology, the EPA awarded EBMUD with a grant to investigate the benefits and limitations of anaerobically digesting food waste from restaurants, grocery stores, and other food handling

facilities. EBMUD bench-scale digesters were fed only food wastes, but were operated under a variety of conditions to determine the optimal operating conditions.

- [More information on EBMUD's study](#)

- organizations are recovering food scraps and submit your own project to EPA.
- [Frequent Questions](#) - Find answers to frequently asked questions about food scraps.
 - [Resources](#) - View publications and links to EPA-sponsored and other Web sites.



View [Anaerobic Digester \(EBMUD\) Oakland, CA](#) in a larger map



Turning Food Waste into Energy at the East Bay Municipal Utility District:



Investigating the Anaerobic Digestion Process to Recycle Post-Consumer Food Waste
<http://www.epa.gov/region09/foodtoenergy>

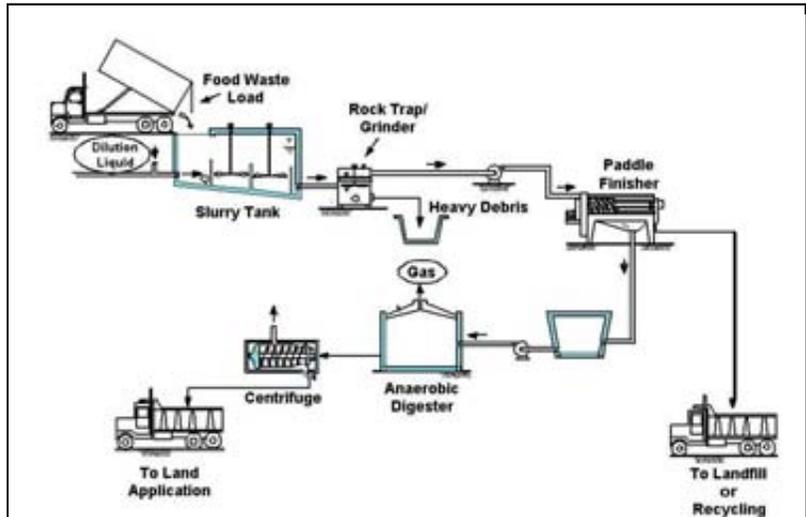
Pilot demonstration project shows that 100 tons of food waste anaerobically digested per day produces enough energy to power up to 1,400 homes.

Why Anaerobic Digestion to Recycle Food Waste?

Wastewater treatment facilities have successfully used anaerobic digestion for many years to treat solids in municipal wastewater and produce beneficial end products: methane gas and fertilizer. In California, approximately 137 wastewater treatment plants have anaerobic digesters for sludge, with an estimated excess capacity of 15-30%¹. This excess capacity could provide a potent recycling opportunity for post-consumer food waste in California. Anaerobic digestion also:

- Reduces volatile organic compounds (VOC's) if used prior to composting
- Produces biogas that can be used for energy
- Reduces solids prior to transporting to a compost facility

¹ Shun, Y. (2006)



The East Bay Municipal Utility District patented food waste processing system. The system removes contaminants from food waste and creates a homogenous, energy-rich slurry, which is anaerobically digested to produce methane (renewable energy) and a soil amendment or fertilizer.

Food Waste is:

- The single largest category of municipal solid waste (MSW) going to landfills in California at 5.9 million tons or 15% of total MSW (CIWMB, 2004).
- A waste that consists of food scraps from restaurants, produce markets, fish markets, school cafeterias, homes, and wherever else food is prepared.
- A waste primarily disposed of in landfills, but about 2.5% is also being composted to produce a fertilizer.
- A waste that is high in energy potential that should be recovered, rather than being lost in a landfill.
- A waste that decomposes in landfills to create methane, a potent greenhouse gas.

Increased Food Waste Diversion:

Many local and state waste management agencies throughout the country are requiring increased solid waste diversion from landfills. In order to encourage food waste diversion from landfills, EPA is interested in developing alternatives to landfill disposal. In 2006, EPA provided a grant to the East Bay Municipal Utility District (EBMUD) in Oakland, California to investigate anaerobic digestion of food waste. The purpose of the study was to identify design and operating criteria for anaerobic digestion of food waste, and to compare food waste digestion to that of municipal wastewater solids digestion. Processing involves creating a slurry from the presorted food waste and further reducing contaminants and food waste particle size prior to digester feeding. Food waste processing using other methods may not produce the same results.



Food waste is delivered to EBMUD and screened, ground and cleaned of contaminants. A typical delivery is approximately 20 tons total weight.



How does anaerobic digestion of food waste compare to municipal wastewater solids?

Materials and Methods

East Bay Municipal Utility District (EBMUD) operated two 30-liter bench-scale digesters at mesophilic and thermophilic temperatures and at 15-, 10-, and 5-day solids residence times during the study. The digesters were fed food waste pulp produced by the EBMUD food waste process. The food waste evaluated during this study is representative of food wastes available from restaurants, produce markets, fish markets and wherever else food is prepared throughout California and around the country.

Key Study Findings

- **Methane Generation:**

- Anaerobic digestion of food waste provides approximately three to three and a half more methane production per volume of digester (2,300 to 3,000 ft³ per 1,000 ft³ of digester volume) than does municipal wastewater solids digestion (750 ft³ per day per 1,000 ft³ of digester volume).
 - The study found that the methane potential of biosolids is around 120 m³ gas/ton and food waste around 367 m³ gas/ton
- **Anaerobically digesting 100 tons of food waste per day, 5 days a week, provides sufficient power for an estimated 800 to 1,400 homes for one year.**

- **Solids Reduction:**

- Food waste digestion results in half the residual produced after digestion, compared to residual biosolids from municipal wastewater treatment sludge digestion. This residual can then be composted for further use.
- Food waste contains more biodegradable solids, based on a higher volatile solids percentage (86% to 90%), than does municipal wastewater treatment solids (70% to 80%).
- Because food waste is more readily biodegradable than municipal wastewater solids, a shorter anaerobic digestion solids residence time is needed.
- The shorter residence time means that food waste can be recycled in smaller digesters than municipal solids, resulting in lower capital costs for new digesters.
- An anaerobic digester can accept much more food waste at one time than municipal wastewater solids without adverse process impacts.
- To illustrate: volatile solids (VS) loading rates of 0.53 lb/ft³-day and chemical oxygen demand (COD) loading rates of 1.1 lb/ft³-day rates for food waste are easily handled, but recommended maximum loading rates for municipal solids are only 0.1-0.2 lb VS/ft³-day and 0.06-0.3 lb COD/ft³-day, respectively.

Food Waste vs. Wastewater Solids Comparison

Parameter	Food Waste Pulp	Wastewater Solids
Volatile Solids in Feed (%)	85-90	70-80
Volatile Solids Loading (lbs/ft ³ -day)	0.60 +	0.20 max
COD Loading (lbs/ft ³ -day)	1.25 +	0.06-0.30
Total Solid Fed (%)	10+	4
Volatile Solids Reduction (%)	80	56
Hydraulic Detention Time (days)	10	15
Methane Gas Produced (meter ³ /ton)	367	120
Gas Produced (liters/day per liter of digester volume)	2.3-3.0	0.75
Biosolids Produced (lbs/lbs fed)	0.28	0.55

For More Information:

If you have questions or concerns, please contact any of the people listed below.

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For the full report please see:

<http://www.epa.gov/region09/waste/organics/ad/index.html>

This project was funded with an EPA Region 9 Resource Conservation Fund Grant
Funding Opportunity Number EPA-R9-WST-06-004

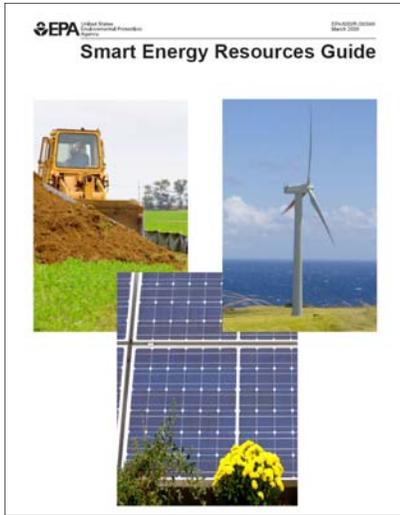




RARE Project Summary (DRAFT) Smart Energy Resources Guide (SERG)

USING SCIENCE TO MAKE A DIFFERENCE IN U.S. EPA REGION 9, THE PACIFIC SOUTHWEST REGION

Regional Applied Research Effort Smart Energy Resources Guide: A Resource for Greener Remediation



Remedial actions taken to clean up hazardous waste sites for environmental restoration and potential reuse are often themselves sources of diesel and greenhouse gas (GHG) emissions. The Cleanup-Clean Air Initiative (CCA) was established by U.S. EPA Region 9's Superfund and Air Divisions to encour-

age GHG and diesel emissions reductions at cleanup sites. Through these efforts, CCA staff engaged in pilot projects and changed Emergency and Rapid Response Service and Response Action Contracts to include language on renewable energy and clean diesel.

Many remediation systems, such as pump-and-treat, may operate for many years, demanding electricity from fossil fuel-powered utilities. Heavy-duty equipment used in construction during site remediation is usually diesel powered. Opportunities to reduce these emissions exist through innovative approaches and new technologies. The purpose of the Smart Energy Resources Guide (SERG) is to provide information on available mechanisms to reduce emissions from energy use at cleanup sites. Examples include energy efficiency upgrades, implementing on-site renewable energy projects, and carbon sequestration.

An overview of renewable energy technologies is presented including costs, availability, applicability, estimated emissions reduction benefits, considerations, permitting, vendor infor-

mation, funding resources, and success stories. Renewable energy technologies covered in this guide are solar, wind, landfill gas, anaerobic digesters, and gasifiers. Additional methods for using renewable energy are provided. Similar information is provided for diesel emissions reduction technologies and cleaner fuels. This document includes information on reducing diesel emissions through retrofitting diesel equipment, using cleaner and alternative fuels, and simple, low-cost practices such as idle reduction. Currently, approximately 15 EPA cleanup sites are using cleaner diesel technologies and fuels or renewable energy to power their remediation systems.

The SERG is a tool for project managers to help them assess and implement these technologies and practices at cleanup sites. With this information, project managers may be better prepared to discuss emissions reductions strategies with contractors and developers. While resources cited in this document focus on U.S. EPA Region 9, many are applicable in other parts of the United States.

What the SERG Can Do for You

The SERG provides information on practices and technologies that can reduce emissions from electricity and diesel use at cleanup sites. This information can be used to:

- Assess possibilities of cleaner electricity and diesel at cleanup sites.
- Share information with contractors.
- Provide background information in order to better communicate with contractors and/or developers on emissions reductions strategies.
- Provide a starting point for implementing cleaner electricity and/or diesel projects.
- Reference guide for funding opportunities.
- Reference guide for tools to help estimate costs of technologies and emissions reductions.

Regional Contact: Michael Gill, Superfund and Technology Liaison (415) 972-3054
www.epa.gov/nrmrl/pubs/600r08049/600r08049.htm



Region 9: Naturally Occurring Asbestos in California

You are here: [EPA Home](#) | [Region 9](#) | [Toxics](#) | [Naturally Occurring Asbestos in California](#) | Clear Creek Management Area

Clear Creek Management Area

[Introduction](#) | [Exposure Assessment](#) | **[Risk Assessment](#)** | [Meaning of Results](#) | [Limitations](#) | [Conclusions](#)

[Sampling Photos](#) | [Study Area](#)

Risk Assessment

Scenarios

Seven typical CCMA use scenarios were created from the individual activities for which EPA collected air samples. Risk estimate calculations were then conducted for the scenarios. The scenarios were designed to make the risk estimations better reflect typical CCMA use patterns and provide more useable information to Bureau of Land Management (BLM) and the public. The scenarios were developed with input from BLM and the California Department of Toxic Substances Control. Five of the seven scenarios represent recreational/volunteer use of CCMA, and two represent typical worker use. The five recreational scenarios are:

- **Scenario 1 Weekend Rider:** Drive in, motorcycle on Saturday, camp on Saturday, sleep in tent, camp on Sunday, motorcycle on Sunday, drive out, vehicle wash, vehicle vacuum.
- **Scenario 2 Day Use Rider:** Drive in, stage (prepare for riding), ATV or motorcycle riding, stage, drive out, vehicle wash, vehicle vacuum.
- **Scenario 3 Day Use Hiker:** Drive in, stage, hike, stage, drive out.
- **Scenario 4 Weekend Hunter:** Drive in, hike/hunt on Saturday, camp on Saturday, sleep in tent, camp on Sunday, hike/hunt on Sunday, drive out, vehicle wash, vehicle vacuum.
- **Scenario 5 Combined Rider/Workday:** Drive in, stage, ATV or motorcycle riding, fence building/repair, stage, drive out, vehicle wash, vehicle vacuum.

The typical worker scenarios are:

- **Scenario 6 Patrol:** Stage at Section 8, drive in and stage at CCMA (lead SUV only, ATV or motorcycle patrolling (lead rider only), stage and drive out (lead SUV only), vehicle wash, vehicle vacuum, unpacking at Section 8.
- **Scenario 7 SUV/Truck Patrol:** SUV/truck patrol (lead SUV only), vehicle wash, vehicle vacuum.

Risk Assessment Methods - Excess Lifetime Cancer Risk estimates were calculated for the scenarios using both the U.S. EPA Integrated Risk Information System (IRIS) and the California EPA Office of Environmental Health Hazard Assessment (OEHHA) toxicity values for asbestos. These are standard methods for estimating risk.

Adult, Child, and Child/Adult Risk Estimates - Consistent with the EPA Risk Assessment Guidance for Superfund (RAGS), a 30-year exposure duration was used for estimating excess cancer risks from the CCMA adult recreational and worker exposures. The risk assessment estimates risks for an adult who visits CCMA for 30 years, a child who visits for 12 years (ages 6 to 18) with his/her parents and then continues to visit for an additional 18 years as an adult (30 years total exposure), and a child who visits for 12 years from ages 6 to 18.

CCMA Use Frequency - The EPA RAGS guidance requires that risks be estimated for the reasonable maximum exposure (RME) that is expected to occur at a site under both current and future land-use conditions. Based on surveys and interviews, an earlier risk assessment conducted by BLM estimated a CCMA recreational RME of 5 off-road vehicle rides a year. Because some users indicated that they rode more frequently, the BLM assessment also used a "high" estimate of 12 days per year. Risks were also calculated for one-day per year to provide a range of estimates and exposures. The EPA risk assessment incorporates the 1, 5, and 12 visit per year frequency of the earlier BLM assessment for Scenarios 1 through 5 and, at BLM's request, uses a 1, 60, and 120 day per year frequency for the worker scenarios, Scenarios 6 and 7.

Risk Assessment Results - *Excess Lifetime Cancer Risk* estimates for Adult, Adult/Child, and Child exposures using the U.S. EPA IRIS risk model are shown in Figures 6 through 8. The Excess Lifetime Cancer Risk estimates using the

Cal/EPA OEHHA model are shown in Figures 9 through 11. For reasons that are explained in more detail in the risk assessment report, the OEHHA toxicity value for asbestos is eight times higher than the IRIS value, and the OEHHA risk calculations reflect the greater toxicity. The IRIS and OEHHA risk estimates can be thought of as bracketing the range of possible risks from CCMA asbestos exposure.

The EPA Superfund program defines the acceptable risk range for exposure to a carcinogen, like asbestos, as 10^{-4} (1 in 10,000) to 10^{-6} (1 in 1,000,000) excess lifetime cancer risk. Exposures which are calculated to cause more than 1 in 10,000 excess cancers are considered to be of concern and may require action to reduce the exposure and resulting risk. It is important to note that the risk assessment present quantitative estimates of excess cancer risk over a lifetime in a population based on the defined exposure scenarios. The scenarios have been designed to represent current and future exposures for recreational and working users of CCMA. The numbers do not predict individual exposures or individual health outcomes.



<http://www.epa.gov/region09/toxic/noa/clearcreek/index.html>

Last updated on Tuesday, July 28th, 2009.

Region 9: Naturally Occurring Asbestos in California

You are here: [EPA Home](#) | [Region 9](#) | [Toxics](#) | [Naturally Occurring Asbestos in California](#) | [Clear Creek Management Area](#)

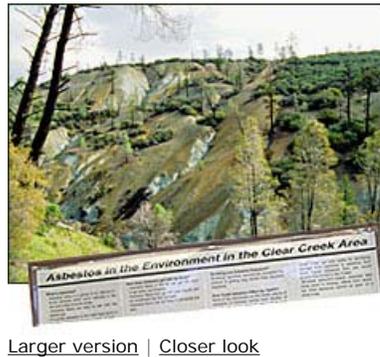
Clear Creek Management Area

[Introduction](#) | [Exposure Assessment](#) | [Risk Assessment](#) | [Meaning of Results](#) | [Limitations](#) | [Conclusions](#)

[Sampling Photos](#) | [Study Area](#)

Introduction

The Clear Creek Management Area (CCMA) in San Benito and Fresno Counties is located on one of the largest naturally occurring asbestos deposits in the world. The rugged terrain overlaying this 31,000-acre serpentine deposit is a popular and challenging riding spot for off-road motorcyclists. The naturally barren slopes, bald ridges, chaparral and rare plants are also enjoyed by rock collectors, botanists, hikers, hunters and campers, including families with children. Thousands of visitors each year use hundreds of miles of criss-crossing routes, a legacy of historic mining activities in the area.



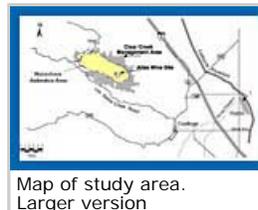
[Larger version](#) | [Closer look](#)

The CCMA is managed by the Department of the Interior's Bureau of Land Management (BLM). Within the boundaries of the CCMA is the Atlas Asbestos Mine Superfund site. In 1991, EPA signed the Record of Decision (ROD) selecting the cleanup remedy for the Atlas Mine. In the ROD, EPA designated the CCMA as one of four geographic areas that comprise the site, but did not propose a cleanup action for the CCMA. Instead, EPA stated that it would evaluate whether the BLM's plans for management of CCMA were adequate to protect public health from exposure to asbestos found in the CCMA's soil and air. BLM has designated the area as hazardous, and asbestos warning signs are posted at entry points and on bulletin boards.

In 2004, as part of the evaluation of the Atlas Mine cleanup for possible delisting of the site from the federal Superfund list, EPA initiated an asbestos exposure and human health risk assessment for the CCMA. The goals of the assessment were:

- To update the 1992 BLM Human Health Risk Assessment by using current asbestos sampling and analytical techniques, and
- To evaluate risks to children because families are frequent visitors to CCMA.

BLM will use the information provided in the assessment to evaluate management and use alternatives in an upcoming environmental impact statement for managing the CCMA. The final Clear Creek Management Area Asbestos Exposure and Human Health Risk Assessment report was released by EPA on May 1, 2008 and is summarized on this website, please use the tabs at the top to navigate among the pages.



Map of study area.
[Larger version](#)

Glossary [\[click to open/close\]](#)

Final Report Resources

CCMA Asbestos Exposure and Human Health Risk Assessment **Final Report** without Appendix G (PDF) May 1, 2008 (Very large file, 160pp, 5.5M)

CCMA Asbestos Exposure and Human Health Risk Assessment **Final Report Fact Sheet** May 1, 2008 (PDF) (10 pp, 356K)

CCMA Asbestos Exposure and Human Health Risk Assessment **Frequently Asked Questions** (PDF) May 1, 2008 (4 pp, 22K)

Press Release announcing CCMA Asbestos Exposure and Human Health Risk Assessment Final Report May 1, 2008

Health and Safety Plan, Appendix F (PDF) 10/22/04 (28pp, 169K)

CCMA Asbestos Exposure and Human Health Risk Assessment Final Report, **Appendix G** (PDF) May 1, 2008 (large file, 250pp, 603K)

Sampling and Analysis Plan (PDF) (60 pp, 248K)

Additional Reference Materials

Agency for Toxic Substances and Disease Registry (ATSDR) publication "**Asbestos and Health: Frequently Asked Questions**" (PDF) [\[EXITEPA\]](#)

Technical Memo 9/5/07 **Human Health Risk Assessment, Air Sampling Event** (PDF) (15pp, 112K)

Technical Memo 11/4/05 **Human Health Risk Assessment, Air Sampling Event** (PDF) (6pp, 93K)

Technical Memo 9/15/04 **Human Health Risk Assessment, Air Sampling Event** (PDF) (6pp, 93K)

EPA Air Sampling Fact Sheet (Feb 2005) (PDF) (2 pp, 400K) (Atlas Asbestos Mine)

EPA Risk Assessment (Aug 2004) (PDF) (4 pp, 110K) (Atlas Asbestos Mine)



<http://www.epa.gov/region09/annualreport/04/land.html#perchlorate>

Last updated on Wednesday, July 18th, 2007.

Region 9: Progress Report 2004

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Clean Land

Hazardous Waste in EPA's Pacific Southwest Region

EPA carries out several federal laws dealing with hazardous waste: First is Superfund, which cleans up the nation's biggest, costliest abandoned hazardous waste sites (the National Priorities List), as well as sites where quick action is needed to deal with imminent threats to public health or the environment. Second is the Resource Conservation and Recovery Act, which regulates hazardous waste storage, transportation, and disposal; cleans up spills and leaks at hazardous waste and underground fuel storage facilities; and encourages saving energy and natural resources through waste recycling, recovery, and reduction. Third is Brownfields, which promotes cleanup and reuse of sites with less serious contamination. Cleanups under these laws are based on the "polluter pays" principle, which means that in most cases, taxpayers don't get stuck with the bill.



The newly-completed Slickrock Creek Retention Reservoir, above, together with an existing water treatment plant, now prevents more than 95% of the Iron Mountain Mine Superfund site's toxic discharges from polluting the Sacramento River.

In 2003, EPA's Pacific Southwest Region secured binding commitments totaling over \$128 million from responsible parties to pay for hazardous waste cleanups. Construction of cleanup facilities (such as groundwater treatment plants) is complete at 44% of the region's 123 Superfund National Priorities List sites, and construction is underway at another 36% of the sites. The remaining 20% are in the investigation stage, although early action has been taken to deal with immediate risks.

collaborating on Revitalization

Brownfields

Last year, EPA accelerated efforts to revitalize abandoned industrial sites (brownfields) with grants totaling over \$7 million in the Pacific Southwest Region to state and local governments, tribes, and nonprofits for assessment, cleanup, a revolving loan fund for cleanups, and job training. This included, for the first time, sites contaminated with leaking fuel from underground storage tanks.

Homes, Jobs and a Ballpark

EPA awarded the city of Oakland, Calif., a \$100,000 grant to help assess and clean up abandoned gas station sites where potential soil contamination from leaking underground

tanks has hindered redevelopment. At one site, EPA worked with Oakland and Alameda County to clear the way for four homes to be built by Habitat for Humanity on a former gas station site in the city's Fruitvale neighborhood. Families moved into the new homes in October 2003. Nearby, EPA grant funds are being used to clean up a former industrial area adjacent to the Bay Area Rapid Transit (BART) rail system so that the site can be redeveloped into a "transit village" with homes, shops, and offices clustered around BART's Fruitvale Station.

In Los Angeles, EPA awarded a \$200,000 grant to the city for environmental job training at Brownfields sites. The city's Community Development Department has targeted the Wilmington industrial tract near the Port of Los Angeles, the Goodyear tract in South Central and the Crown Coach site near East Los Angeles for assessment, cleanup and redevelopment. The city plans to train 50 students, achieve an 80 percent placement rate, and track students for a full year. The seven-week, 300-hour job training program consists of hazardous waste handling, innovative environmental technologies, lead abatement, and asbestos abatement. Recruitment will focus on low-income residents and placement will be conducted by the city's WorkSource Centers.

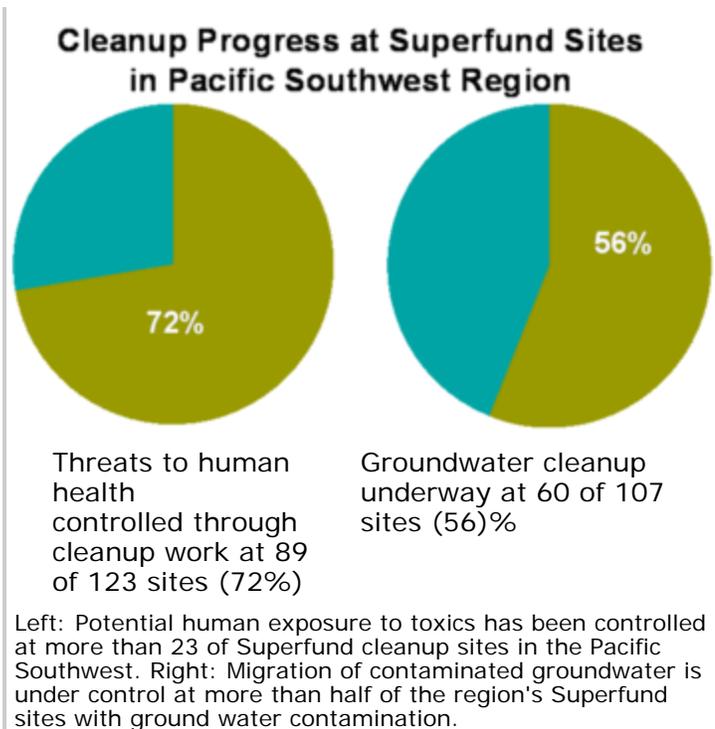
In West Covina, Calif., EPA and California's Department of Toxic Substances Control entered into two prospective purchaser agreements with the city to clear the way for a planned Big League Dreams sports complex and a municipal golf course on parts of the former BKK Landfill site. Other parts of the property were used as a hazardous waste landfill, and a municipal waste landfill as recently as 1996. The agreements encourage reuse of the land the city plans to purchase from the BKK Corp. The city may sell the land for commercial development, or develop it without incurring liability for cleanup costs. However, the agreements do not relieve BKK, the owner and operator of the landfills, from liability.

At the WDI Superfund Site in Santa Fe Springs, Calif., that city is using a grant from EPA's Superfund Redevelopment Initiative to develop a specific plan for beneficial reuse of the site. Parts of the 38-acre site, including a buried concrete reservoir, were formerly used for disposal of oil drilling wastes. Construction of an impermeable cap over the waste reservoir and installation of monitoring systems is expected to be underway by mid-2004.

Cleanup Highlights

Iron Mountain Mine

At the Iron Mountain Mine near Redding, Calif., one of the nation's toughest, costliest cleanup challenges, EPA completed construction of the \$40 million Slickrock Creek Retention Reservoir, which collects polluted runoff from the former mine. The runoff is extremely acidic and tainted with toxic dissolved copper and zinc. This dam and reservoir, together with a treatment plant already in operation, now prevent 95% of the mine's toxic discharges from



flowing into the Sacramento River. The river has four salmon spawning runs each year, and supplies drinking water directly to 70,000 people.

The treatment plant, built in the early 1990s, has treated over 1.05 billion gallons of poisoned water, the equivalent of 120,000 tanker trucks, and prevented 1.6 million pounds of copper and 5.6 million pounds of zinc - 80-90% of the mine's toxic discharges - from reaching the river. Before treatment began, the mine discharged more than a ton of toxic metals into the river per day, making it the nation's largest discharger of toxic metals.

The mine, active for more than a century but abandoned in the 1960s, honeycombed the mountain with tunnels. The tunnels now act as conduits for air and water, which percolates through the metal-bearing ores of the mountain, sustaining six strains of sulfur- and iron-loving bacteria, which dissolve the metals and acidify the water. The chemical reactions involving the bacteria and water are continuous, creating a constant flow of toxic runoff to creeks that border the mountain. The rainy season increases the flow. Cleanup efforts have focused on capturing the runoff and treating it to neutralize the acidity and remove the metals. The resulting cleaner water can then flow downstream harmlessly, but tons of inert sludge from the treatment process must be trucked back up the mountain for disposal in pits left by earlier mining operations.

In December 2000, EPA successfully settled cost recovery litigation, providing \$160 million to assure that the treatment plant will be operated and maintained in perpetuity. It was the largest settlement with a single potentially responsible party in EPA history.

Santa Monica Drinking Water Cleanup

In November 2003, EPA and the Los Angeles Regional Water Quality Control Board facilitated an agreement between the city of Santa Monica and three major oil companies to restore the Charnock Sub-basin as a drinking water source. This well field, which formerly supplied about half the city's water, had been shut down since 1996, when its water was found to be contaminated with MTBE, a gasoline additive that had leaked from underground fuel tanks at 27 sites.

In 1999, EPA and the Regional Board ordered the oil companies to supply replacement water to the city, at a cost of more than \$3 million a year - a total of more than \$13 million by late 2003. The

2003 legal settlement requires the oil companies to build treatment systems for the Charnock water supply wells, to remove the MTBE as water is pumped out. "This agreement proves that when all levels of government - local, state and federal - work together, we serve the common good and produce a comprehensive solution to a difficult problem," commented EPA Regional Administrator Wayne Nastri.

Perchlorate

Perchlorate is a rocket fuel component that became detectable in water at low levels in 1997, when the state of California developed a new testing method for it. Although the level at



EPA Regional Administrator Wayne Nastri presents a "big check" for a \$100,000 grant to Los Angeles Councilwoman Janice Hahn and Deputy Mayor Jonathan Kevles. The grant will help the city assess, clean up, and redevelop abandoned gas station sites like this one, where leaking underground storage tanks may have contaminated soil and groundwater.

which perchlorate poses a risk is under review by the National Academy of Sciences, this chemical can disrupt the thyroid gland, which is essential for proper development of newborns and infants.

Since 1997, perchlorate has been found in groundwater in 348 of 6,400 drinking water wells tested in California, and at 12 Superfund hazardous waste cleanup sites in California and Arizona. The presence of perchlorate has increased the cost of these cleanups, and delayed them, as cleanups already underway have had to be re-evaluated. Several such sites are in the San Gabriel Valley in Southern California, where a 10-square-mile plume of groundwater was found to be contaminated with perchlorate, in addition to other chemicals from industrial facilities. Treatment of the contaminated water to remove perchlorate began in 2000, and is expected to continue for at least 30 years.

The highest levels in EPA's Pacific Southwest Region were found in Las Vegas Wash in Henderson, Nev., where a Kerr-McGee facility had manufactured the substance. Over the past two years, Kerr-McGee has been pumping the groundwater through a treatment plant, removing about one ton of perchlorate per day and reducing perchlorate levels in the wash by 70%.

In 2003, EPA ordered Goodrich Corp. and Emhart Industries, as potentially responsible parties, to investigate a 160-acre parcel in the Rialto-Colton area of San Bernardino County, which is a suspected source of perchlorate found in 10 nearby drinking water wells owned by several water supply systems.

A number of EPA's nationally recognized perchlorate experts work out of the Pacific Southwest Regional Office and have played leadership roles in sorting out the technical, legal and regulatory issues surrounding perchlorate. For more information, go to www.clu-in.org/perchlorate.

One Cleanup Program: TCE in Mountain View, Calif.

In the Silicon Valley city of Mountain View, EPA and California state agencies are working together under EPA's "One Cleanup" program at eight sites where groundwater has been contaminated with trichloroethylene (TCE). EPA is coordinating with the Regional Water Quality Control Board and the Bay Area Air Quality Management District on air monitoring, groundwater cleanup, and public outreach efforts so that investigation and cleanup issues are being addressed consistently across the sites.

In 2001, EPA's new draft health risk assessment for TCE found that the chemical, which contaminates groundwater at hundreds of Superfund sites throughout the nation, may present a health risk at much lower levels than previously known. The new data caused concern in Mountain View, where TCE-tainted groundwater was being pumped out and treated by air-stripping at the Middlefield-Ellis-Whisman (MEW) Study Area, the Naval Air Station Moffett Field, and GTE sites. Nearby residents and workers worried that they might be exposed to harmful levels of TCE, either from soil vapor rising from the contaminated ground water through foundation cracks or plumbing conduits into buildings (vapor intrusion) or from the air-stripping devices, which can disperse low levels of TCE into the outdoor air.

In response to these community concerns, the potentially responsible parties (PRPs), who have been cleaning up the groundwater contamination at these sites for years, voluntarily replaced nine of the air strippers with liquid phase carbon treatment systems or advanced oxidation systems, both of which release no TCE into the air.



In Mountain View, Calif., responsible parties removed equipment that had treated TCE-contaminated groundwater by air-stripping, and replaced it with systems that release no TCE into the air.

EPA directed the PRPs to test the indoor and outdoor air at 26 buildings and 66 residences that overlie the highest levels of TCE in shallow groundwater. EPA also began testing outdoor air at ten reference sites for comparison, and NASA did air sampling at the former NAS Moffett Field. Over 2,000 air samples were collected in 2003. EPA is using the data to evaluate the potential long-term health risks to building occupants and residents from the vapor intrusion pathway. All the data indicate that there is no short-term or immediate health risk to residents or workers in the area.

To reduce long-term risks, PRPs took interim measures to reduce levels of TCE in the air in 12 commercial buildings and one residence where elevated levels of TCE were detected. The measures included sealing cracks in floors and potential piping conduits, installing a subslab depressurization system, and optimizing building ventilation systems.

EPA has also helped concerned community members form the Northeast Mountain View Advisory Council, which meets with EPA monthly to discuss air testing results and the ongoing groundwater cleanup, ask questions, and voice concerns.

Construction Complete: Sharpe Defense Depot and Koppers

EPA designated the Sharpe Defense Depot's cleanup as a "construction complete" in 2003 when all short-term cleanup actions were complete and the groundwater pump-and-treat system was operating successfully. The 724-acre base near Lathrop, Calif., was listed on EPA's Superfund National Priorities List following confirmation that metals, pesticides, and solvents had contaminated soil and groundwater at the site. The Army successfully remediated contaminated soils using soil vapor extraction and excavation with off-site disposal. Three groundwater treatment systems were installed to clean up the groundwater. Sharpe Defense Depot remains a functioning military base.

EPA also reached the "construction complete" milestone at Koppers, an inactive wood treating site near Oroville, Calif. A covenant of restrictions is in place designating the 205-acre site for industrial use only and restricting use of groundwater at the site. Groundwater contamination is contained and declining as water is pumped out, treated, and pumped back into the ground. This will continue for about 20 more years, until the water is clean.

Emergency Response

Building Emergency Response Capacity, Readiness

Since the tragedy of 9/11/2001, EPA has been increasing its capacity to respond to emergencies, regardless of cause. When chemical spills, oil spills, chemical fires, or hazard

ous waste present an imminent threat to public health or the environment, EPA has the authority to respond whether the emergency stems from an accident, terrorism, or extreme weather events like floods. In the Pacific Southwest, EPA has enhanced its emergency response infrastructure, opening new Emergency Response Field Offices in Las Vegas, Nev., and Long Beach, Calif., to shorten response time for emergencies in Arizona, southern Nevada, and southern California; a new Pacific Southwest response center in San Francisco; and new emergency response equipment warehouses in San Francisco and the Los Angeles area.



In Fiscal Year 2003, EPA responded to 24 incidents in the Pacific Southwest where hazardous chemicals posed an imminent threat to human health or the environment.

Last year, EPA's Pacific Southwest Emergency Response staff participated in industry-sponsored spill drills as well as multi-agency simulated responses to biological attacks and intentional releases of radioactive materials in San Francisco, Seattle, and Clark County (Las Vegas), Nev. EPA also participated in exercises to strengthen security at nuclear power plants in the region.

Throughout the Pacific Southwest Region, EPA has been working with federal, state, and local health and air quality agencies to create a system for early detection of biological terrorism incidents. EPA continues to support state and local partner agencies building their capacity to respond to emergencies, in one case providing funding for a new hazardous materials emergency response truck for Washoe County, Nev. (the Reno-Tahoe area).

To deal with emergencies along the U.S.-Mexico border, EPA has worked with Mexican authorities to put bi-national sister city response plans in place that facilitate cooperation between U.S. and Mexican jurisdictions that face each other across the border. The fifth such agreement, for Tijuana and the city and county governments of San Diego, Calif., was signed in October 2003. In 2004, work is underway on the sixth sister city agreement in the Pacific Southwest Region, for the city of Mexicali, Baja California, and Calexico, Calif.

For oil and chemical spill prevention and preparedness, EPA routinely inspects industrial facilities for compliance with Spill Control and Countermeasure (SPCC) regulations, Facility Response Plan requirements, and the Emergency Planning and Community Right-to-Know Act (EPCRA). Violations found at 11 facilities resulted in penalties of over \$830,000, including one involving a diesel spill on the lower Colorado River from fuel tanks on a farm. In addition to the routine inspections, last year EPA conducted three surprise oil spill drills at major oil storage and transport facilities, and visited seven high-risk chemical facilities in populated areas in the Pacific Southwest, to test their readiness. In 2004, EPA plans to conduct 12 surprise oil spill simulation exercises at major oil facilities.

Taking Rapid Action

In addition, EPA responded to 24 incidents involving hazardous chemicals and 13 oil spills in Fiscal Year 2003, including:

- A nearly five-acre, three-story-high pile of construction and demolition debris in Fresno, Calif., caught fire on January 11, 2003. Smoke from the fire stayed low due

to the winter inversion layer, creating air quality issues that prompted the local air district to issue health advisories and the state to request EPA assistance. Working within a Unified Command structure with more than 20 agencies, EPA conducted air monitoring, water management, fire fighting and heavy equipment operations and provided health and safety support. The Fresno Fire Department, Fresno County Environmental Health and the state's Integrated Waste Management Board were key players in a month-long effort to extinguish the blaze. Once the fire was out, EPA partnered with the state waste board to remove the remaining 105,000 tons of debris to a permitted landfill.

- At Ford City, a community near the National Petroleum Reserve in California's Kern County, EPA worked with the state Department of Toxic Substances Control to remove 3,300 tons of lead-contaminated soil around 14 homes. The soil was disposed at the Clean Harbors hazardous waste landfill in Buttonwillow, Calif.
- At the request of the Gila River Indian Community, EPA removed thousands of gallons of hazardous waste from an abandoned site on tribal land near Sacaton, Ariz. Nearly 100 55-gallon drums of flammable, toxic chemicals, and 3,000 gallons of hydrochloric acid sludge, were removed from a defunct company that extracted precious metals from mine waste.
- EPA's Pacific Southwest Region sent five on-scene coordinators to help with recovery of material from the Space Shuttle Columbia disaster in Texas.
- On the Pacific island territory of Guam and the Commonwealth of the Northern Mariana Islands, which includes Saipan, EPA recovered, removed, and safely disposed of abandoned lab chemicals and pesticides.

EPA People - Ned Black

Ned Black is the leading ecological risk assessor for the Pacific Southwest Region's Superfund Division. In this role, he is responsible for laying a firm scientific foundation for EPA's decisions on Superfund hazardous waste cleanups. His work is essential to ensuring that Superfund cleanups adequately protect human health and the environment.

Often, data is lacking on how each toxic chemical at a contaminated site affects the variety of species and habitats present, making it a challenge to produce scientifically defensible ecological risk assessments. To meet this challenge, Dr. Black chairs a Biological Technical Assistance Group (BTAG), which has become the primary forum for discussion of current technical literature among key staff from state and federal agencies, including the U.S. Fish and Wildlife Service. This group has brought a consistent, scientific, and consensus-based approach to the agencies' ecological risk assessments. As a result, potential confrontation with responsible parties about assessments that form the basis for costly cleanup work has largely been avoided.

Through his efforts on the BTAG, Dr. Black has been instrumental in progress at some of the more contentious hazardous waste cleanup sites in the Pacific Southwest, including California's Leviathan Mine, Casmalia, Alameda Naval Air Station, Hunters Point Naval Shipyard, and McClellan Air Force Base sites, and Hawaii's Pearl Harbor site. Dr. Black has prepared or reviewed ecological risk assessments for each of these sites, and many more.

Dr. Black has also developed a two-day training class in ecological risk assessment, which he



Ned Black

has made available to state and local government officials, as well as EPA staff. By sharing his knowledge and experience through this training and by nurturing the BTAG, Dr. Black has leveraged his effectiveness, providing the tools for state and local governments to make cleanup decisions based on defensible ecological risk assessments.

His success is due in large measure to his extensive, and nationally recognized, expertise in biology, ecology, and the scientific principles of ecological risk assessment. Dr. Black has brought a keen professionalism, dedication to EPA's mission of protecting human health and the environment, and scientific credibility to cleanup efforts in the Pacific Southwest.



Regional Methods Project Summary

Collection of Pyrethroids in Water and Sediment

USING SCIENCE TO MAKE A DIFFERENCE IN U.S. EPA REGION 9, THE PACIFIC SOUTHWEST REGION

Regional Methods Program

Collection of Pyrethroids in Water and Sediment Matrices:

Development and Validation of a Standard Operating Procedure

Loss of pyrethroid insecticides onto surfaces during sample collection can confound the interpretation of analytical and toxicity test results. Sample collection devices, container materials, and water matrix composition have a significant influence on the association of pyrethroids to container walls, which can be as high as 50 percent.



Any sample collection method involving transfer through multiple containers or pieces of equipment increases the potential for pyrethroid loss. This loose “surface-association” with container walls can be reversed through agitation.

When sampling water matrices with pumps or autosamplers, no pyrethroids were lost as long as the water was moving continuously through the system. When collecting water samples in containers, pyrethroid sorption to glass was less than to plastic, and sorption to plastic was less than to Teflon (glass < plastic < Teflon). Additionally, pyrethroids were easier to re-suspend from the glass container walls.

Since the amount of surface-association is proportional to the ratio of volume-to-contact-area of the sample, taking larger-volume field samples (greater than 3 liters) reduced

pyrethroid losses to less than 10 percent. The amount of surface-association cannot be predicted easily because of the dependence on water matrix composition; samples with higher dissolved organic carbon or suspended-sediment concentrations were observed to have lower percent loss. Sediment samples were not affected by glass-container sorption (the only containers tested). Standardized sample-collection protocols are critical to yield accurate pyrethroid concentrations for assessment of potential effects (see text box).

Minimizing pyrethroid association to the surfaces of sampling equipment:

- Container composition affects the extent of aqueous pyrethroid loss; pyrethroids associate less to glass containers than to plastic (HDPE or LDPE), and Teflon has the greatest pyrethroid loss caused by association to the container surface.
- Containers should be agitated vigorously for at least 1 minute immediately before transfer to another sample container.
- Maximize the volume-to-contact-area ratio.
- When using a filtration apparatus or autosampler, pump speeds should be at 500 mL/min when pumping aqueous pyrethroids.
- Composition of the water matrix affects the extent of pyrethroid association. Higher amounts of DOC or suspended sediments lessen the amount of pyrethroids associated to the container surfaces.
- Appreciable losses of pyrethroids were not found for sediment samples collected in glass containers.
- When possible, water samples should be analyzed within 3 days of collection. Sediment samples can be frozen for up to 6 months (prior to extraction).

Regional Scientists: Debra Denton and Patti TenBrook
ORD Scientists: John Zimmerman, Brian Schumacher of the U.S. EPA Las Vegas Laboratory
USGS Scientists: Michelle L. Hladik, James L. Orlando, and Kathryn M. Kuivila, U.S. Geological Survey
Summary Report: <http://pubs.usgs.gov/sir/2009/5012/>



Regional Science Council Education and Outreach (DRAFT) Climate Change 101

USING SCIENCE TO MAKE A DIFFERENCE IN U.S. EPA REGION 9, THE PACIFIC SOUTHWEST REGION

Climate Change 101

This series of classes was created by the Regional Science Council in response to the Region 9 Energy and Climate Change Strategy. The half-day class, taught by Region 9 Scientists, is designed to help expand regional staff knowledge of the relevant science, policies, and programs related to climate change. The intent is to inform and inspire staff to meet the challenges of climate change at work and at home. Over 130 Region 9 staff members attended the five classes held during FY08-09.

Topics Covered

Too Hot Not To Handle - HBO video

Each class started with a viewing of the first half of this video. In this movie, scientists explain what global warming is and what the consequences may be. Potential solutions are discussed, as well as what is currently being done in several US states. It explains that global warming is a global average, but in different parts of the World we may see extremes in the weather, either very hot or cooler than usual.

Ecosystems

This module covers some of the ecological effects of climate change, such as the loss of ecosystems, reduced biodiversity, and the extinction of populations and species

Instructors: Charlotte Ely, Eugenia McNaughton

Health Impacts

Health effects related to heat, extreme weather events, air pollution, water- and food-borne diseases, and vector- and rodent-borne diseases are discussed in this module.

Instructors: Colleen Reid, Meredith Kurpius

Greenhouse Gases

Which are the greenhouse gases? Where do they come from? How we account for them?

Instructors: Ben Machol, Asia Yeary, Nancy Levin, Meredith Kurpius

Life Cycle Assessment

The four stages of a life cycle assessment (LCA) and how a LCA can be used in everyday situations to make smarter and “greener” decisions are presented in this module.

Instructors: Gail Morison, Matt Small

Energy

How do we use energy? Where do we get our energy? How has our energy consumption changed over the years? What are the greenhouse gases attributable to energy consumption? What are the other impacts of energy consumption (other than GHG emissions)?

Instructors: Ben Machol, Saskia VanGendt

Policy

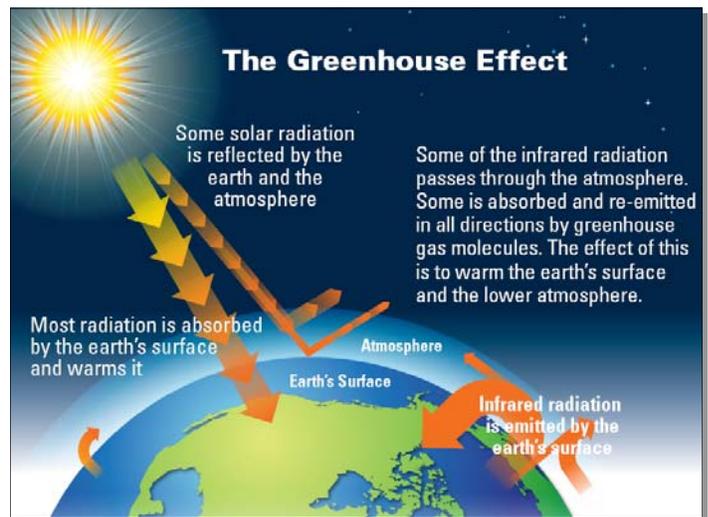
National, State, Regional, and International policies are discussed, as well as cap and trade and upcoming legislation.

Instructors: Ben Machol, Ray Saracino

What You Can Do

A class exercise is used to estimate your carbon footprint and find ways to make changes and live smarter.

Instructor: Matt Small



www.epa.gov/climatechange/downloads/Climate_Basics.pdf



Regional Science Council Education and Outreach (DRAFT) Climate Change Speakers Series

USING SCIENCE TO MAKE A DIFFERENCE IN U.S. EPA REGION 9, THE PACIFIC SOUTHWEST REGION

Climate Change Speakers Series

This series of presentations was created by the Regional Science Council in response to the Region 9 Energy and Climate Change Strategy. This series features a number of regional, national, and international experts from different fields offering unique insights into various climate change related issues. The intent is to inform and inspire staff to meet the challenges of climate change at work and at home. Representative topics and speakers are listed below.

The Speakers

- **Greener Mobility: Vision for 21st Century American Public Transport**
Tian Feng, *Chief Architect, SF BART*
- **Jumbo Squid Invasions in the California Current: A Harbinger of Global Change?** John Field, *Biologist, Southwest Fisheries Science Center (NOAA)*
- **Kyoto, Copenhagen & Beyond: European Union Climate and Energy Policies** Nicholas Hanley, *Head of Governance and Communication, European Commission Directorate-General for the Environment*
- **Transporting 'US' to Sustainability**
Dan Kammen, *Director, Renewable and Appropriate Energy Lab, UC Berkeley*
- **The Drivers of Change: The Economic Case for Protecting the Climate** Hunter Lovins, *President and Founder, Natural Capitalism Solutions*
- **Think You're as Green as Can Be? Think Again: Practical Steps to Reducing Your Energy Consumption at Home and at Work** Robert Marcial, *Director, PG&E Energy Center*
- **U.S. EPA Climate Change Policy Direction - A view from Washington DC**
Brian McLean, *U.S. EPA, Director of Atmospheric Programs, OAR*
- **Environmental Justice: Perspectives and Solutions** Angela Johnson Meszaros, *Co-Chair, Environmental Justice Advisory Committee on the Implementation of AB 32, Director of Policy & General Counsel, CA Environmental Rights Alliance*
- **Energy Efficiency and Climate Change**
Art Rosenfeld, *Commissioner, California Energy Commission*
- **Adapting To What We Can't Prevent, And Preventing What We Can't Adapt To**
Dr. Stephen Schneider, *Professor of Env. Biology and Global Change, Stanford University*
- **Tracking Human Overshoot with the Ecological Footprint: Creating Measurable Success for a Sustainable Future** Mathis Wackernagel, *Executive Director, Global Footprint Network, Creator of the "Ecological Footprint" Concept*
- **Direction of Federal Climate Change Policy** Amy Zimpfer, *USEPA Region 9 Air Division Associate Director*



Regional Contacts: Elizabeth Stahl (415) 972-3743, Adam Freedman, Matt Small, Loretta Barsamian, Ben Machol, Lynda Deschambault, Eugenia McNaughton



DRAFT

Regional Science Strategy and Resources

USING SCIENCE TO MAKE A DIFFERENCE IN U.S. EPA REGION 9, THE PACIFIC SOUTHWEST REGION

“Science must be the backbone for EPA programs...”

The first of three EPA values articulated by new EPA Administrator Lisa Jackson, All Hands letter, January 23, 2009.

Region 9 of the U.S. Environmental Protection Agency (EPA), is charged with protecting human health and the environment over a large and diverse area (Arizona, California, Hawaii, Nevada, American Samoa, Guam, and the Commonwealth of Northern Mariana Islands). We also have environmental relations with Asia, Mexico, and the Pacific Islands. Our regulatory programs cover air, water, land, waste, communities, ecosystems, environmental stewardship, rural areas, tribal lands, large cities, agriculture, fisheries, forests, industry, shipping, refineries, and everything in between. In addition, Region 9 has diverse environmental settings including deserts, forests, mountains, valleys, tropical islands, rain forests, bays, and coastlines. This fact sheet describes our strategy for using science to help address environmental issues in EPA Region 9. For more information contact Matt Small, Regional Science Liaison (415) 972-3366.

Regional Science Strategy

As Scientists in Region 9, we seek to achieve the following:

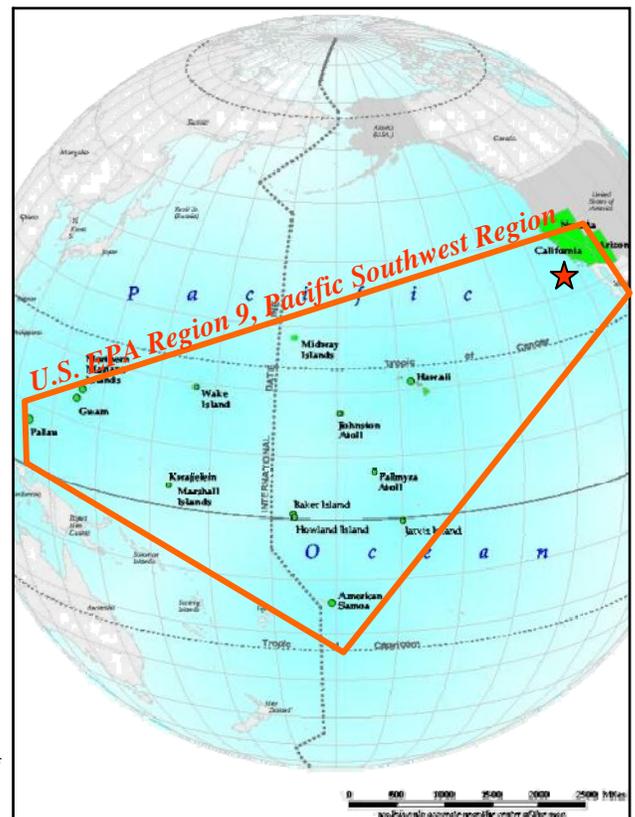
- Promote the use of science to improve the regulatory process and achieve EPA’s mission.
- “Do the right science” by identifying and addressing science priorities.
- “Do science right” by encouraging sound scientific practices.
- Promote science innovation in the Region.
- Effectively use environmental data in support of regional priorities and effective decision-making.
- Build better partnerships with our states and academic institutions around common priorities and interests.

To accomplish these goals, we collaborate with the Office of Research and Development (ORD), federal agencies, states, tribes, and academic institutions. We also seek resources for Regional science needs, acknowledge our partners, and communicate our successes.

Regional Science Resources

The greatest science resources in EPA Region 9 are the science and engineering staff. Science and engineering staff work to bring sound science into the regulatory process on a daily basis. These scientists and engineers work together to accomplish multiple science related activities:

- Communicating science issues and information to management
- Engaging people at both staff and management levels on scientific priorities
- Tracking science priorities and results
- Stressing science as a critical element in decision-making
- Strengthening partnerships with ORD and other Regions.
- Communicating to ORD how the laboratory programs benefit our region
- Helping to ensure that scientists obtain training



- Identifying opportunities for regional scientists to provide regional training
- Providing mentoring for regional science staff
- Identifying and advertise science related opportunities for regional staff
- Providing peer review/technical support/sounding board for scientists in the Region

Science Team

The science team is composed of a Management Science Advocate, the Regional Laboratory Director, Quality Assurance Office Manager, Superfund and Technology Liaison (STL), the Regional Science Liaison (RSL), Regional Science Policy Advisors, and the Regional Science Council.

Regional Science Council

The Regional Science Council (RSC) provides focused leadership on science in Region 9. The members of the RSC include a representative and alternate from each Division. Representatives from the Science Team are members at large. The Council holds monthly meetings to discuss science activities and issues.

The council works with the RSL to determine Regional research needs, develop candidates for the Regional Research Partnership Program (RRPP), and assists with the solicitation and selection of grant recipients for the Regional Applied Research Effort (RARE) and Regional Methods (RM) Programs. The RSC also sponsors seminar series, conferences, and workshops. Most recently sponsoring classes and seminar series on global climate change issues.

The Regional Laboratory

The Region 9 Laboratory (R9 Lab) provides analytical, technical and programmatic support at a regional level. That support is critical to accomplishing EPA's mission of protecting human health and the environment. The R9 Lab provides a full range of routine and specialized chemical and biological testing of air, water, soil, sediment, tissue and hazardous waste for ambient and compliance monitoring as well as criminal and civil enforcement activities. In FY 2008, the R9 Lab performed over 11,000 analyses. In addition to fixed laboratory analytical support, the lab also provides field sampling and field analytical support.

The R9 Lab also has a significant role in relation to EPA's Strategic Plan for Homeland Security. In order to enhance regional response capability and preparedness, the R9 Lab participates in several laboratory networks including the Interagency Laboratory Working Group (ILWoG); the California Mutual Aid Laboratory Network (CAMALNet); the Environmental Response Laboratory Network (ERLN) and the Regional Drinking Water Laboratory Response Plan Network. In addition, the Region 9 Lab along with other regional labs provides technical and analytical support for EPA's Office of Research and Development's National Homeland Security Research Center's (NHSRC) efforts to provide standard methods for agents related to homeland security incidents.



Brenda Bettencourt and Chris Cagurangan discussing analytical data at the EPA R9 Lab in Richmond, CA (R9 Photo Archives).

The Quality Assurance Office

The Quality Assurance Office works with all entities receiving EPA support to collect and use environmental data. The Office oversees the Region 9 Quality System, which is described in the its Quality Management Plan. The Office's responsibilities include conducting Quality System oversight of EPA Regional programs, grantees (states, tribes and locals), contractors, other federal agencies, and the regulated community; supporting and reviewing project level QA/QC requirements; providing QA and technical support to Regional programs, States, Tribes, and local governments; and offering training and information on data quality issues.