



Newsletter

Environmental Connection

September-October 2012

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Wildfires: Don't Let Them Smoke You Out

DEQ Air Quality Reports and Visibility Index Help Gauge Exposure

Recent wildfires across the state have sparked concerns about the health impacts from the large volume of smoke and soot produced by these fires. These concerns about air quality increase when the smoke from wildfires combines with the high summer ozone levels that trigger red alert days.

During the summer wildfire season, residents often wonder how to protect themselves and their families from the negative impacts of smoke and if the air is safe to breathe. Below are some facts about wildfire smoke along with resources to help residents assess their risk and safeguard their health.



What Is Wildfire Smoke?

Wildfire smoke is composed of a complex mixture of gases, fine particles, gases and water vapor that form when organic matter burns. Particulates from smoke are a mixture of solid particles—pieces of wood and other burning solids—and liquid droplets. They tend to be quite small, generally less than 2.5 micrometers in diameter, or approximately 1/70th the size of a human hair.

The biggest health threat from smoke comes from fine particles. Because they lodge more deeply in the lungs, they are a greater health concern than larger particles. Fine particulates get into the eyes and respiratory system, where they can cause health problems such as burning eyes, runny nose, and illnesses such as bronchitis. They can also aggravate chronic heart and lung diseases.

Finally, the incomplete burning of wood or other organic materials produces carbon monoxide, the gas in smoke. Its levels are highest during the smoldering stages of a fire.

Tracking Air Quality Conditions

Daily Reports

The Air Monitoring Center (AMC) is responsible for operating and maintaining an ambient air monitoring network to protect the health and welfare of the citizens of Utah. The AMC provides air pollution information about the daily air quality and issues health advisories.

The AMC reports the current air pollution hourly for nine counties in Utah: Box Elder, Cache, Salt Lake City/Davis, Tooele, Uintah, Utah, Washington, and Weber. These reports show the levels of fine particulates (PM_{2.5}) as well as ozone levels.

Visibility Index

A visibility index provides a way to judge smoke levels on a continual basis. As the smoke gets worse, the index changes and so do the guidelines for protecting yourself. Smoke concentrations tend to be very high for a few hours then drop off dramatically.

Research has shown that the "spikes" may be what cause some of the most harmful effects. Since smoke scatters light well, the visibility changes drastically as smoke concentrations increase.

To judge visibility:

- Face away from the sun.
- Determine the limit of your visibility range by looking for targets at known distances (miles). The visible range is that point at which even the high contrast objects totally disappear.
- After determining visibility in miles, use the [visibility chart](#) to determine health effect and appropriate steps to take.

Who Is Most Susceptible?

- Individuals with heart or lung disease, such as congestive heart failure, angina, chronic obstructive pulmonary disease, emphysema or asthma may experience health effects earlier and at lower smoke levels than healthy people.
- Older adults are more likely to be affected by smoke, possibly because they are more likely to have heart or lung diseases than younger people.

- Children also are more susceptible to smoke because their respiratory systems are still developing, they breathe more air (and air pollution) per pound of body weight than adults, and they're more likely to be active outdoors.

Symptoms

Smoke can irritate the eyes and airways, causing coughing, a scratchy throat, irritated sinuses, headaches, stinging eyes or a runny nose. Smoke can make symptoms worse for those with heart or lung disease.

Individuals with heart disease might experience chest pain, palpitations, shortness of breath, or fatigue. People with lung disease may not be able to breathe as deeply or as vigorously as usual, and they may experience symptoms such as coughing, phlegm, chest discomfort, wheezing and shortness of breath.

When smoke levels are high enough, even healthy people may experience some of these symptoms.

How to Protect Yourself

Use common sense. If it looks smoky outside, it's probably not a good time to mow the lawn or go for a run. Children should play indoors.

Take steps to keep indoor air as clean as possible. Keep windows and doors closed unless it is extremely hot outside. Run the air conditioner and keep the fresh air intake closed and the filter clean to prevent bringing additional smoke inside.

Help keep particle levels inside lower. When smoke levels are high, try to avoid using anything that burns, such as wood fireplaces, gas logs, gas stoves, or even candles. Don't vacuum, since it stirs up particles already inside homes. Don't smoke.

Individual with asthma or other lung disease should follow the directions of their doctor regarding medication and asthma management plan. Call your doctor if symptoms worsen.

Individuals with heart or lung disease, older adults, and those with children should talk with their personal physician about whether and when they should leave the area. When smoke is heavy for a prolonged period of time, fine particles can build up indoors even though they are not visible.

Some room air cleaners can help reduce particle levels indoors as long as they are the right type and size. Don't use an air cleaner that generates ozone.

Paper "comfort" or "dust" masks found at hardware stores are designed to trap large particles, such as sawdust. These masks generally will not protect lungs from the fine particles in smoke. An "N95" mask, properly worn, will offer some protection. For more information about effective masks, see the Respirator Fact Sheet provided by CDC's National Institute for Occupational Safety and Health.

For more information on local wildfires, fire conditions, and wildfire containment, go to the [National Interagency Fire Center Web site](#).

Air Quality Gaining Recognition as a Statewide Issue Pollution a Growing Problem from Cache County to Utah's Dixie

Once considered the province of congested urban areas, air pollution is steadily extending its atmospheric reach beyond the state's population centers. Rural communities throughout Utah now find themselves carefully watching their ozone and PM2.5 levels, something they wouldn't have considered twenty years ago. Whether a result of increased population or resource development, residents are paying attention to the health and quality of life consequences of air pollution in their communities. The reasons for deteriorating air quality vary, as do the responses from cities and counties to this growing problem.

Cache County

Proposed Solution Voted Down, Reducing Mitigation Options

The Cache Valley features bucolic green farmlands, rolling hills, meandering streams, and the rugged ridges of the Wellsville Mountains. It is also struggling with winter ozone and PM 2.5. In 2009, the EPA designated Cache and neighboring Franklin County in nonattainment area for PM2.5 after the area violated federal air quality standards for the pollutant. Fine particulates can cause serious heart and lung problems, with the small particles lodging deeply in the lungs and damaging pulmonary and cardiac functioning.



PM2.5 can originate from several sources. Direct PM2.5 is generally the result of wood burning. The majority of the PM2.5 in Cache County, however, is the result of secondary formation of fine particulates from the chemical reaction of precursors, mainly nitrogen oxides (NOx) and Volatile Organic Compounds (VOCs).

Now Cache is facing a deadline to meet EPA air quality standards. The PM2.5 State Implementation Plan (SIP) is due in mid-December, and Cache County must find ways to lower the levels of the pollutant in time for the Air Quality Board meeting December 5th. As part of its SIP process, the Division of Air Quality (DAQ) ran air quality models for Cache and concluded the most effective method for lowering PM2.5 in the valley would be through a vehicle emissions and maintenance program similar to ones currently in effect in counties along the Wasatch Front. An I/M program could identify vehicles emitting higher than allowable levels of NOx and VOCs, which in turn would reduce emissions of these critical PM2.5 precursors.

A committee of representatives from the county, DAQ, Bear River Health Department, and automotive repair facilities prepared a draft ordinance for mandatory emissions testing earlier this summer. The ordinance would have delegated authority to the Board of Health to address all issues related to the inspection and maintenance program. As written, the ordinance would have satisfied the SIP requirements for PM2.5 standards and brought the county into attainment.

On August 14th, however, the Cache County Council voted 5-2 against the proposed ordinance, striking down what appears to be the valley's best chance for meeting the federal PM 2.5 standards.

Residents raised concerns with the Council about the costs of the program and some council members were not convinced that it would result in significant improvement to the county's air quality.

At this point, with no other apparent options, it is unclear how Cache County will comply with the federal standards.

Uintah Basin Interim Study Shows Oil and Gas Production, Vehicle Traffic Contribute to Winter Ozone

A dry winter spared the Uintah Basin from exceeding federal ozone standards this past winter, but longer-term data indicates that pollutant levels must be addressed for the Basin to avoid having the EPA designate the area as nonattainment for ozone.



According to the Uintah Basin 2012 Winter Basin Ozone Study's interim report, oil and gas operations and emissions from vehicle travel are contributing factors to wintertime ozone formation in the Basin. Measurements from the study found the highest levels of VOCs were located around the oil and gas fields and the highest levels of NOx were located in transportation corridors running through in Roosevelt and Vernal. VOCs and NOx combine in the presence of heat and sunlight to form ozone. Environmental scientists believe that sunlight reflecting off the snow contributes to the chemical formation of wintertime ozone either through accelerating the chemistry or by enhancing reflected sunlight that drives the reaction.

County officials point to the weather as a key factor in wintertime ozone, since lack of snow this winter may account for the lower ozone levels this year. But increased oil and gas development and associated truck transport mean higher levels of VOCs and NOx emissions, which contribute to higher ozone levels under typical wintertime meteorological conditions. The Winter Basin Study is designed to identify appropriate and effective emissions mitigation measures based on better understanding of the complex interplay of weather conditions and pollutant levels. The full study report with detailed results and conclusions is due out in October of this year.

Utah is participating in EPA's Ozone Advance Program in an effort to implement early reduction strategies that protect public health and provide the Basin with more flexibility in future emission reductions proposals. Strategies include:

- Developing an early reduction tracking system to give credit to companies who take early action to reduce emissions.
- Developing a framework to ensure that new development in the Basin uses best available control technology (BACT).
- Working with the EPA to develop a consistent permitting strategy across jurisdictional regions in the Basin.

With approximately 5,300 new wells in the pipeline, proactive measures may be the best option available to the Basin for continued development and avoidance of a nonattainment designation for ozone.

Summit County

Ozone levels meet and exceed those in Salt Lake City

Park City doesn't seem to fit the profile for air pollution. Yet readings last year indicated that Summit County could be facing similar challenges to its air quality as its urban neighbors.

The Summit County Health Department identified air quality as a health concern several years ago when measurements of PM 2.5 increased from their previously low levels.

Monitoring began in 2009 for PM2.5 to establish a baseline. Preliminary data indicates low levels of fine particulates, but more robust monitoring will be required to determine the level and extent of PM2.5 pollution in the county.



Ozone is a greater concern. An air monitor placed in Summit County two years ago reported ozone levels similar to those recorded at Salt Lake City's Hawthorne Monitor. Last summer, however, some of the air quality values for ozone in Summit County exceeded those at the Hawthorne Monitor. The Board of Health was concerned enough about these readings that it authorized \$60,000 to purchase air monitors.

The Board deferred the purchase of monitors pending the findings of a current DAQ saturation study designed to identify possible causes for high ozone levels. Possibilities range from high VOC emissions from scrub oak to wind transport from the Wasatch Front.

DAQ worked with the city and county to optimize air monitor placement in Snyderville Basin, Parley's Canyon, Kamas, and downtown Park City. These monitors will provide measurements of pollutant levels that, taken together, will present a clearer picture of air quality conditions throughout the county. An air monitor in Morgan may help determine what, if any, role air masses play in elevated ozone level.

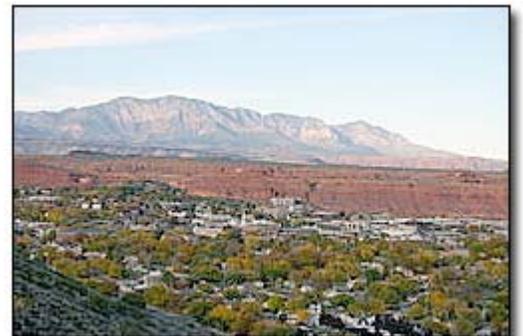
This fall, DAQ's Air Monitoring Section (AMS) will evaluate data collected from monitors to identify the sources of elevated ozone levels. Park City and Summit County Health are both concerned about the health and environmental impacts of ozone and will consider their next steps based on DAQ's findings.

Washington County

Officials Hope Proactive Measures Will Preserve Area's Clean Air

Southern Utah's red rock canyons and panoramic vistas boast pristine airsheds. Clean air and spectacular scenery draw visitors from around the world and entice retirees to relocate to enjoy the area's clear air and quality of life.

But residents of Utah's Dixie aren't complacent about their air quality. They recognize that a growing population, fugitive dust from construction activity, and the wind borne transport of ozone from as far away as Los Angeles could threaten the



very qualities that make the area so attractive. Air monitors located at Zion National Park, St. George, and Santa Clara registered elevated pollution levels over the past five years. This has health as well as clean air implications, particularly for the elderly and young children.

Elected officials, businesses, and clean air advocates are coming together to address potential threats before they become real problems. Groups as diverse as the Southern Utah Clean Air Task Force, Citizen's for Dixie's Future, and the Associated General Contractors have joined to search for solutions that encourage voluntary emissions reductions and behavior change rather than mandates and enforcement. This year, Clear the Air Challenge, a pledge-based initiative that encourages participants to change their transportation habits to reduce their emissions, had its first southern Utah campaign kick-off.

St. George recently purchased its first air monitor to measure pollution levels, with city officials hoping that their budget next year will allow them to purchase a second \$30,000 monitor. DAQ monitors have picked up pollution drifting into the area from Las Vegas, Los Angeles, and possibly even China. The Division has stepped up its testing over the past two years, in part because recent readings indicate that ozone levels are close to violating federal standards. Resolving air quality issues in the region will be complicated by the transport of pollutants from outside Utah's borders, transport that DAQ has no authority to regulate.

Southern Utah residents hope that their proactive measures will protect and improve the area's air quality and alter the behaviors that lead to increased air pollution. By taking steps now, southern Utah hopes to avoid some of the air quality problems and restrictions faced by its rural counterparts.

PCE Contamination Found on Salt Lake's East Side DEQ, Salt Lake City Urge EPA To Prioritize Area for Cleanup

Sampling conducted to determine the extent of possible contamination from the 2010 Red Butte oil spill brought about a surprising discovery. While the sampling detected no crude oil, it did find tetrachloroethylene (PCE) contamination in several residential Salt Lake City springs, leading to a call by Salt Lake City Mayor Becker, DEQ, and the Salt Lake Valley Health Department for an Environmental Protection Agency (EPA) investigation into the contamination and a subsequent request for placement of the impacted area on EPA's National Priority List (NPL).



PCE is widely used in dry cleaning and metal degreasing. The Salt Lake City Veterans Affairs Medical Center is the suspected source of this PCE contamination. The chemical is reasonably anticipated to be a carcinogen by the U.S. Department of Health and Human Services. In addition to concerns regarding PCE contaminating drinking water, PCE in groundwater volatilizes easily, allowing its vapors to move through soils and enter basements through cracks in the foundations. This can create unhealthy vapor buildup in homes and buildings, putting inhabitants at risk.

The PCE plume was first detected in the 1990s during routine sampling of an irrigation well in the Mt. Olivet Cemetery. This led to the discovery of the 700 South 1600 East PCE Plume site. Groundwater concentrations in monitoring wells reached 320 µg/L in some areas; the drinking water standard is 5.0 µg/L. PCE was detected in a Salt Lake City municipal drinking water well in 2004 at levels below this standard, but the city chose to remove the well from service as a precautionary measure. With the discovery of PCE at the East Side Springs Site, it became apparent that the initial plume was migrating and now covers approximately 300 acres. If left unchecked, the contamination could continue to migrate and put other public drinking water supplies at risk.

DEQ conducted a Preliminary Assessment and a Site Investigation under CERCLA authority from EPA. Both reports were approved by EPA and are the basis for moving forward with evaluating the site further under a proposed NPL listing. Based on the investigation by DEQ and with preliminary local government and public support for listing, the EPA intends to proceed with proposing placement of the site on the NPL in September 2012 and open up the process for public comment. Salt Lake City also plans to provide residents with information and solicit comments. A final NPL determination may come as early as April 2013.

Craig Anderson New Lead DEQ Attorney Salt Lake County Attorney to Head DEQ Legal Team

The State's new top environmental attorney has returned to his roots.

Craig Anderson, who represented DEQ's Division of Environmental Response and Remediation in the early 1990s, was recently appointed as the Division Chief of the Environmental Division for the Utah Attorney General's Office. He replaced Denise Chancellor, who retired in June.



"Craig has tremendous experience in environmental law and I'm thrilled he has accepted the appointment" said Amanda Smith, executive director of DEQ, who announced the appointment on August 22nd.

Anderson had been serving as the Chief of the Environment/Public Health/Natural Resources Unit for Salt Lake County for the past 19 years, reporting directly to the County District Attorney. As the county's chief environmental attorney, Anderson focused on environmental compliance and enforcement, water resources, and eminent domain.

Prior to joining the County Attorney's Office, he represented DERR for three years. "I feel like I'm coming back home," Anderson said. "This is an exciting opportunity to represent DEQ at a time when the state is faced with very important and complex environmental regulations."

Attorney General Mark Shurtleff welcomed the appointment. "Ever since I worked for Craig in the Salt Lake County Attorney's Office in the 1990s, I've known him to be a brilliant lawyer and dedicated public servant," Shurtleff said. "I'm delighted he has agreed to lead our Environmental Division."

Anderson served as the Chair of the Energy, Natural Resources and Environmental Law Section of the Utah State Bar in 1996. He taught urban planning, policy and environmental law as an adjunct professor between 1993 and 2006 at the University of Utah. He received his law degree from the University of Utah's College of Law in 1977.

Holly Refinery Takes the U-CAIR Pledge Voluntary Implementation of Controls Will Reduce Sulfur Emissions

HollyFrontier's Woods Cross Refinery recently accepted Governor Gary Herbert's UCAIR challenge, pledging to go beyond the requirements of its permit by utilizing additional control technologies in its modernization project.

"Clean air is good for Utah, good for the economy, and good for our quality of life," proclaimed Governor Herbert. "We applaud Holly for going the extra mile to improve air quality in our state."

Holly proposes to treat the off gas released by the Sulfur Recovery Unit Tail Gas Unit by routing it through a new Wet Gas Scrubber. This additional treatment will reduce sulfur dioxide (SO₂) emissions by 90 percent or more, resulting in an emissions decrease of approximately 150 tons per year.

The refinery plans to increase its refining capacity from the current level of 31,000 barrels per day (bpd) to 60,000 bpd. Approximately 14,000 bpd of that increase will come from [black and yellow waxy crudes](#) originating in the Uintah Basin.

"We challenged our employees and consultants to come up with innovative ways to reduce our emissions as part of our refinery's modernization process," explained Lynn Keddington, Holly's Woods Cross Refinery Manager. "UCAIR is all about doing people doing their part to clean the air. We felt that as good corporate citizens, we needed to do our part too."

Division of Air Quality Director Bryce Bird commends Holly Refinery for its efforts to reduce emissions. "When a company like HollyFrontier looks at its processes and finds innovative ways to cut emissions, everybody wins. We encourage other companies to follow Holly's example of going above and beyond to improve Utah's air quality."

DEQ Protects Air in Holly Refinery Expansion DAQ Protects Air Quality Through the Permitting Process

The Department of Environmental Quality requires industries requesting modifications to existing operations to apply for a permit if the modification will, or will likely, increase or change the character of the operation's air emissions, making it a source or indirect source of air pollution. This permitting program ensures that modifications do not significantly degrade air quality and, in areas with unhealthy air, that new emissions do not slow progress toward cleaner air. The permitting process also assures



residents that a large, modified industrial source in their neighborhoods will be as clean as possible and that advances in pollution control occur concurrently with industrial expansion.

Permits are legal documents that facility owners and operators must abide by. The permit specifies allowable construction, emission limits, and the operations of the emissions source.

Since Holly Refinery's proposed Heavy Crude Processing Project involves changes to existing refinery operations, including the installation of new equipment and the decommissioning, replacement, and modification of existing equipment, Holly must file a Notice of Intent (NOI) with the Division of Air Quality (DAQ) before it can begin construction, operation, or installation of these modifications.

The NOI is a detailed permit application that describes the processes at the facility, procedures for handling raw materials, expected composition and physical characteristics of any emissions, performance characteristics of air pollution control equipment and an analysis of the best available control technologies (BACT) to minimize emissions. The NOI also contains information about predicted emission levels from refinery operations as required by law for specific pollutants from sources in nonattainment or attainment areas. It also includes an air quality analysis and an opportunity for public involvement.

Holly Refinery Heavy Crude Processing Project

In 2007, DAQ approved changes to Holly's operations in anticipation of a significant increase in the refinery's capacity for processing Canadian heavy crude with a higher sulfur content. Now that lower sulfur black wax from the Uintah Basin is readily available and economically feasible to process, Holly wishes to modify its operations to accommodate these local waxy crudes. These modifications would include the construction of additional processing units but would also eliminate construction of some of the units included in the 2007 permit. The use of local, lower sulfur waxy crudes in place of the higher sulfur Canadian crude planned under the earlier permit will result in a reduced need for sulfur recovery units and overall sulfur emissions.

Proposed modifications include:

- an additional crude processing unit;
- a fluid catalytic cracking unit (FCCU) to break large hydrocarbon molecules in black wax into smaller molecules for refining through a poly gasoline unit into high-octane gasoline blend stock;
- a hydrocracker/hydroisom unit to produce high-quality lubricants and ultra low sulfur diesel;
- an additional 12 crude unloading bays to accommodate tanker trucks from the Basin;
- additional storage tanks; and
- additional wastewater treatment.

Holly proposes to make these modifications to existing and previously permitted units. At the same time, the refinery plans to eliminate units currently allowed under their existing permit. Overall, Holly proposes to increase the processing capacity of the refinery from a current level of 31,000 barrels per day to 60,000 barrels per day.

Holly plans to utilize BACT on new equipment and add controls to existing and previously permitted equipment. BACT provides the best available pollution control technology taking economic, environmental, and energy costs into consideration. BACT can be add-on control equipment or modification of the production processes or methods, including fuel cleaning or treatment and innovative fuel combustion techniques. BACT is determined on a case-by-case basis.

Holly and UCAIR

In response to Governor Herbert's appeal for voluntary emissions reductions through the UCAIR clean air initiative, Holly proposes to treat the off gas from the current Sulfur Recovery Unit (SRU) Tail

Gas Incinerator by redirecting it through a new Wet Gas Scrubber in another unit. While wet gas scrubbers are required to control the FCCU units, Holly is not currently required to send the off gas from the SRU through the scrubbers as part of their permit application. Redirecting off gas ordinarily emitted directly into the air through additional pollution controls will reduce sulfur emissions by approximately 150 tons per year. This emissions control technique was developed by refinery workers and consultants in support of Holly's UCAIR pledge and demonstrates the opportunities available to industry to make meaningful, voluntary changes to their operations to improve Utah's air quality.

The Utah State Implementation Plan (SIP), which establishes source-specific emission limits to meet air quality standards, set emission caps for operations at the Holly refinery. By not installing previously permitted equipment and replacing higher sulfur Canadian crude with lower sulfur Basin black wax, sulfur dioxide (SO₂) emissions from the refinery will decrease significantly. Holly is therefore requesting, in conjunction with its UCAIR pledge, to reduce its allowable SO₂ emissions by 500 tons per year. By making this request, Holly has volunteered to lower the allowable emissions cap currently allowed under the SIP.

What's Next

DAQ received Holly Refinery's NOI on May 23, 2012. The information in the Notice is currently undergoing an extensive review by the permitting branch at DAQ. The public can also view this document on the DAQ web site during this initial review.

Prior to issuing an approval or disapproval, DAQ will provide the public with an opportunity to comment on Holly's proposal. The Division, after considering comments received from the public, may choose to issue an Approval Order if the degree of pollution control for emissions, is at least best available control technology and the modifications meet applicable legal requirements and the requirements of the Utah SIP.

Black and Yellow Wax Fueling Refinery Expansions Heavy Crude Poses Challenges, Creates Opportunities

Black and yellow waxes are thick crude oils with a higher paraffinic content than most crude oils found in North America. These waxy crudes are viscous and have a high pour point, which means they become semi-solid at lower temperatures.

Refining waxy crudes presents some challenges. Although black wax is well suited for making gasoline, lubricants, and diesel fuel, refining must occur close to the source. Because waxy crudes solidify quickly, effective transport and handling of these heavy oils has been problematic.

The Uintah Basin in eastern Utah contains significant black and yellow wax crude oil reserves. Salt Lake refineries can purchase these waxy crudes at a discount since they are located relatively close to the Basin, reducing the transport distance. Advancements in technology now make it possible for local refineries to process black and yellow wax in fluid catalytic cracking units (FCCUs), which break the wax's large molecules into smaller ones that can be transported more easily through pipelines. As a result, refining heavy crudes has become more economically attractive.

A 10-year agreement between Holly and Newfield Exploration to deliver 20,000 barrels per day (bpd) to the refinery will provide Holly with a consistent supply of waxy crudes beginning in 2014. Holly also hopes to capitalize on the increased market for its petroleum products in Cedar City and Las Vegas resulting from the recent startup of the UNEV oil pipeline.

The Utah legislature passed a concurrent resolution during its 2012 session that encouraged the development of new technologies and facilities to enhance both the production and value of Uintah black wax. This resolution reinforced Utah government support for increases in waxy crude production and refining in the state.

In 2007, the Division of Air Quality approved modifications to Holly's permit, allowing it to modernize its refinery and expand its processing capacity. At that time, Holly anticipated it would be increasing its production of higher sulfur heavy crudes. Now that processing the low sulfur black and yellow wax from the Uintah Basin has become economically feasible, Holly proposes to revise some of these permitted changes to accommodate this increase in its supply of black wax and process these lower sulfur crudes more effectively.

Draft Study Provides Snapshot of Uintah Basin Pollution

Researchers and policymakers are one step closer to understanding why the Uintah Basin experiences episodes of high wintertime ozone.

Here's what they found: Although oil and gas wells contribute significantly to air pollution plaguing the Uintah Basin, a growing number of people driving vehicles also play a role. That's according to preliminary findings of an extensive study launched last winter and released in August.

"The preliminary results do give us some important information we can draw from to help develop the best possible mitigation strategies," said Brock LeBaron, deputy director of the Division of Air Quality who is leading this multi-partnership effort.

The Uintah Basin Winter Ozone Study was commissioned by a number of partners, including the Utah Department of Environmental Quality, Uintah Impact Mitigation Special Service District, Western Energy Alliance, Bureau of Land Management, National Oceanic and Atmospheric Administration, and the Environmental Protection Agency. The partners contributed matching dollars and in-kind services for the estimated \$5 million project to lay the foundation to understanding the chemical and meteorological conditions that create the unusual winter ozone episodes in the Basin.

The study indicates:

Observed levels of ambient [Volatile Organic Compounds](#), or VOCs species were highest in gas-production areas, lower in oil-production areas, and lower still in population centers. Examples of VOC sources include oil and gas production, and on- and off-road vehicles.

The highest [nitrogen oxides](#), or NOx concentrations were observed in the Basin's population centers, Vernal and Roosevelt, for instance. Concentrations were lower in gas-production areas, and lower still in oil-production areas. Examples of NOx sources include on- and off-road diesel vehicles, gas compressor stations, and coal-burning power plants.

The findings give researchers some of the information they need to identify the cause of high ozone, but the study was not without challenges.

"The Basin's mild winter and lack of snow cover did not create the right conditions for high levels of ozone to form" said LeBaron. "We were able to gather most of the data we needed, but there are some key missing pieces."

While the mild winter kept ozone low—the highest reading was 62 parts per billion, shy of the 75 ppb standard—and created problems for the researchers, there was an upside.

“The good news” said Uintah County Commissioner Mike McKee “is that we didn’t exceed the standard once last year.”

The study and official findings will be released in October of this year. In the meantime, to learn more about the findings, recommendations for gathering remaining data and potential mitigation strategies visit DEQ’s webpage: <http://www.deq.utah.gov/locations/uintahbasin/index.htm>.

This article was written by Stacey Adams, environmental planning consultant with DEQ’s Office of Planning and Public Affairs.

Scientists Sample Emigration Creek

Scientists sample Emigration Creek as part of water quality study. Information used to keep stream healthy and protect humans from E. Coli, a bacteria found in the intestine of warm blooded animals.



As part of the Emigration Creek TMDL or Total Daily Maximum Load study, Hilary Arens, an environmental scientist with the Division of Water Quality (DWQ), collects water samples from the gully running through Hogle Zoo.



The samples taken by Hilary will be compiled for a Synoptic Study—a small part of the larger TMDL study—that shows a 24 hour snapshot of the pollutant load in the creek.



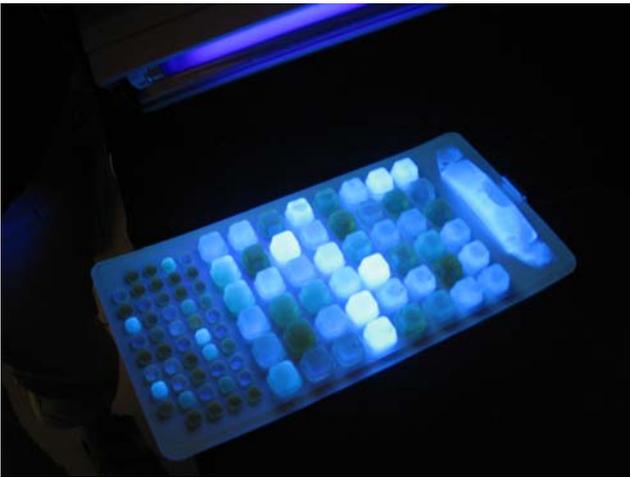
Hilary and Tim Rose with Salt Lake City Public Utilities measure in-stream flows to help determine the severity of water contamination.



DWQ works in close collaboration with Salt Lake City Public Utilities. Here Tim Rose, with Salt Lake City, and Hilary Arens with DWQ, are greeted by Buckeye, the Zoo's 9 year old macaw whose enclosure is just above DWQ's sample site.



Once taken, Hilary processes the samples in DEQ's "wet lab" to determine results.



Once the samples are mixed with a reagent, sealed, and incubated for 24 hours, the samples are ready to be studied. The glowing cells indicate the presence of E Coli.