

Flares: It's OK to Smoke

Flare operators have been taught from time immemorial “Don’t smoke the flare!” After all, smoke is an indicator of incomplete combustion; it means that too much of the flared gas remains as carbon and too little is converted to carbon dioxide and water. Also, a smoking flare looks bad; most people don’t want to see smoke and some don’t even want to see a flame. The solution to these problems seems relatively simple — just operate the flare properly to ensure good combustion efficiency and add plenty of steam to prevent unsightly smoke.

The general control device requirements (40 CFR §60.18) of EPA’s New Source Performance Standards (NSPS) are broadly recognized as authoritative on proper flare operation; they stipulate that the heating value of the gas burned in an assisted (steam or air) flare must be at least 300 British Thermal Units per standard cubic foot (BTU/scf) and that the exit velocity at the flare tip must be less than 60 feet per second for flares used to meet various NSPS industrial emission limits. EPA’s §60.18 requirements are, in turn, based on tests summarized in EPA’s 1983 *Flare Efficiency Study* report, which concludes that flares, when run under standard industrial operating conditions, should be able to destroy at least 98 percent of the flared gas. For years, plant owners and operators have followed EPA’s guidance, assured that their flares were being operated correctly and that state and federal regulatory agencies would agree. Thus, the expression “If I meet §60.18, my flare is at least 98-percent efficient.”

However, the common interpretation and application of EPA and state flaring rules and guidance have recently been called into question by a study conducted by the University of Texas at Austin under contract to the Texas Commission on Environmental Quality (TCEQ). In 2010, tests were conducted at John Zinc’s Tulsa, Oklahoma test facility to determine whether flares, when operated according to §60.18,



at high turndown, varying steam or air assist ratios, and varying flare gas heat content in fact achieve the assumed 98-percent destruction and removal efficiency (DRE).

The tests were conducted for a variety of combinations of flared gas heat content, flared gas flow rates (ultra low flow conditions which correspond to low tip velocities), and steam and air assist rates. Tests were conducted in a semi-controlled environment where the flare operating conditions were adjusted and controlled at set levels, but the ambient conditions (temperature and wind speed) were just monitored and recorded.

Measurements were made using several different techniques. A sample was extracted from the flare plume and analyzed by traditional devices such as mass spectrometers and gas chromatographs. Simultaneously various remote sensing systems were used in a single-blind measurement study to determine the adequacy of remote sensing systems relative to physically taking samples.

The results of the tests, described in the August 1, 2011 *TCEQ 2010 Flare Study Final Report*, demonstrate that an acceptable DRE (i.e., greater than 98 percent)

flares >>> continued on page 8

FROM THE TRENCHES

Four-Wheelers in Paradise

Often being in “the trenches” requires perseverance in the grittiest of work conditions. For the routine job in the Texas Gulf coastal region, this usually means sweat and bugs, but on rare occasions you get lucky and find yourself in a silver-lined trench.

In early 2009, fresh on the heels of the 2008 financial market crash, we received a request from a development company to conduct an environmental due diligence assessment. At the time, this was a rare project request as business acquisition and divestiture transactions had ground to a halt. The opportunity proved to be even more unique as the property was located on a pristine stretch of beach on the Pacific Ocean in Baja, Mexico and was proposed to be developed as a natural oceanfront golf resort.

Two days later I found myself descending through morning clouds over the cactus-covered mountain terrain of Los Cabos, the southernmost territory in Baja, Mexico. En route to the property, we passed by Sammy Hagar’s beachfront abode where my driver boasted that he had worked as Sammy’s bodyguard for many years.

Before departing for Los Cabos, I had established the bases for evaluating the site’s environmental standing — notably potentially applicable Mexican national and regional environmental laws (which cover many of the same media and activities that EPA regulates in the U.S.) and other best management and work practices commonly employed during site development. When I arrived at the site, I received a crash course in golf course development and operations. We started with a tour of the proposed infrastructure, including irrigation systems, pump stations (cleverly disguised to blend into the hillside), irrigation ponds that doubled as course hazards, and the turf farming operation.

After orientation, it was time for the site tour and on this sandy, grassy environment the most efficient mode of transportation was by four-wheeler! We started off moving uphill and away from the beach to gain the highest elevation which would allow us to translate the proposed development features (clubhouse, front and back 9 holes, and maintenance facilities) onto a topographic map. Our view revealed many of the natural features of the site including large and small wet weather creeks (arroyos) running from the hills, west down to the coastline. The master plan called for preserving the arroyos to allow for natural drainage during the short wet season. We also studied the rolling sand dunes and rock features that led from the vegetated interior of the site to the ocean. The master plan also proposed preservation of these dunes to provide challenging golf course hazards and surround the site in



natural features. Looking out to the water I noticed some irregular breaks in the wave patterns that I couldn’t immediately identify. I asked my local guide what they were; he simply smiled and handed over the binoculars. Grey whales! They were here in the colder months to breed and give birth. It was amazing to see them with the naked eye so close to the shoreline.

We left our perch, and rode the brakes, carefully carving our wheels down the hillside to the interior of the property and arrived at a plot that was noticeably different than its immediate surroundings. We investigated on foot and found that this large rectangle was much less densely vegetated than the natural environment. Upon inquiry, our site host informed me that the property was actually used during the filming of the movie *Troy* (starring Brad Pitt in the role of Achilles). We saw that the film crew had cleared this plot during the shoot and attempted to re-vegetate it afterward. Although we didn’t note any major environmental concerns, this restored area would need some additional care to prevent any unwanted erosion from occurring.

Our final area of investigation was the beach front. Here the developer was proposing a saltwater well installation that would serve as the intake for a reverse osmosis desalination plant. It turned out that local ordinances prohibited golf courses, hotels, and other large entities from withdrawing from the city water supply. Instead, they were required to provide their own sources of usable water. Although the proposed water plant would provide a continuous source of water for golf course maintenance and guests, its operation was projected to run up a hefty electric bill and require a backup generation capability given the sometimes spotty reliability of the local power supply.

trenches >>> *continued on page 6*

Violators Beware: OSHA is Committed to Enforcement and Transparency

During her tenure, Secretary of Labor Hilda L. Solis has repeatedly emphasized the Department of Labor's ongoing and renewed commitment to safe workers and workplaces and enforcing safety regulations. She recently reaffirmed that commitment in an August statement released in conjunction with the announcement of recent statistics for workplace fatalities. Preliminary results indicate that the number of workplace fatalities remained constant during the past two years, with 4,547 deaths in 2010, and 4,551 deaths in 2009. Although that number is significantly lower than the estimated 14,000 workers who died each year on the job when the Occupational Safety and Health Act was originally passed in 1970, the Department of Labor is not satisfied with the current statistics. Secretary Solis stated:

We cannot relent from our enforcement of laws that keep our nation's workers safe. One worker killed or injured on the job is too many. As our economy continues to strengthen and the workforce expands, we at the Department of Labor will remain resolute in our mission to ensure that safety is not sacrificed as America's workers provide for themselves and their families. My constant focus is 'good jobs for everyone,' and safety is an essential part of that equation.

Supporting OSHA's aggressive semi-annual regulatory agenda, Deputy Assistant Secretary of Labor for OSHA, Jordan Barab, recently warned a research symposium that, "despite what goes on in Congress, [OSHA] [has] absolutely no intention of pulling back or retreating." Barab alerted attendees that OSHA's regulatory agenda aims to extend enforcement beyond traditional manufacturing and construction sectors.

Consistent with recent enforcement trends, Barab also defended OSHA's increased use of willful citations, General Duty Clause citations, and negative press releases when it issues citations. Specifically, Barab indicated that OSHA is issuing more willful citations, which carry maximum fines of \$70,000 per penalty, to achieve a greater deterrent effect. According to the July 14, 2011 BNA OSHA Reporter, Barab further commented that OSHA is justified in its increased use of General Duty Clause citations and will continue to use this statutory "catch all" to combat a host of workplace hazards.

The Department of Labor announced its semi-annual regulatory agenda on July 7, 2011, and one agenda item worth watching is "I2P2" or OSHA's proposed Injury Illness and Prevention Program Rule. Under I2P2, employers would be required to inspect, identify

and proactively correct hazards in their workplaces. When the proposed rule was initially published in the December 2010 semi-annual regulatory agenda, OSHA planned to start the regulatory review process by June 2011. Although this date remains in the current regulatory agenda, no such review process has begun; according to Deputy Assistant Secretary Barab, the review will begin "shortly" but no date has been set. In the OSHA Reporter article, Barab conceded that the issuance of a Final Rule could take "several years."

While it may take time to enact new regulations, OSHA is committed to enforcement and wants the public to know this. As part of its ongoing effort to maintain open and transparent enforcement of safety regulations, the Department of Labor has significantly enhanced its online enforcement database, hoping to increase public access to and understanding of the Department's enforcement activities. The interactive website provides extensive data pertaining to the Department's inspections and identified violations, as well as individual inspection records and enforcement history of particular companies. The enforcement database is available at <http://ogesdw.dol.gov>.

In other developments, OSHA released an updated *Field Operations Manual* earlier this year that provides procedures and guidance to OSHA inspectors carrying out the Department of Labor's safety enforcement responsibilities. Although the updated manual does not alter OSHA regulations or penalties, the changes to the manual primarily integrate new programs, such as the Severe Violator Enforcement Program previously implemented by the Department, and combine information that had been scattered throughout the manual. The new Field Operations Manual is available at http://www.osha.gov/OshDoc/Directive_pdf/CPL_02-00-150.pdf.

As OSHA has also changed its procedures for calculating fines, now is an important time to prepare for an OSHA inspection. We recommend advanced planning, in coordination with legal counsel, to prepare for the critical decisions that are often made quickly during pressure-filled situations *before* OSHA actually comes calling. ☀

Matthew Deffebach, Partner
Trace R. Blair, Partner
Emma Cano, Associate
Haynes and Boone, LLP
(www.haynesboone.com)

News Briefs

national news

President Orders Speedy Environmental Reviews

On August 31, President Obama directed five federal agencies to identify and expedite permitting and environmental reviews for high-priority infrastructure projects with significant potential for job creation. The Departments of Agriculture, Commerce, Housing and Urban Development, Interior, and Transportation were each instructed to identify, within 30 days, three high-priority job-creating infrastructure projects for expedited review and permitting. Key criteria for the selections include projects that are funded and can be reviewed and permitted within 12 to 18 months. Agencies are to use the experience with these high-priority projects to implement policy and practices to improve efficiency and effectiveness for review and permitting other infrastructure projects. For more information, contact Roger Brower at 410.312.7907 or rbrower@zephyrenv.com.

EPA Cross-State Pollution Rule Met with Concern and Opposition

On October 7, EPA's rule to reduce the interstate transport of fine particles and ozone went into effect. Covering 27 states, the Cross-State Air Pollution Rule (CSAPR) requires major reductions in electric utility emissions of sulfur dioxide (SO₂) and nitrogen oxides (NO_x) as early as January 1, 2012, when the program starts (see July 2011 *Currents*). Industry spokesmen, however, have voiced strong concern about being able to make the required reductions without jeopardizing their ability to reliably supply electricity. While some states such as Virginia and Maryland have already begun to make reductions in SO₂ and NO_x emissions, others could be forced to curtail power generation to meet the new levels. For example, in Texas, one of the most heavily affected states, Luminant Generation Company warned of power unit and mine closures in order to comply with the rule and petitioned the Court to stay the rule's applicability. And on September 21, the Texas Attorney General sued EPA over the CSAPR rule. For more information, contact Ed Fiesinger at 281.668.7353 or efiesinger@zephyrenv.com.

President Delays Tighter Ozone Standards

On September 2, President Obama instructed EPA to withdraw the draft ozone standards it proposed

on January 19. The proposed 8-hour ozone primary National Ambient Air Quality Standard of between 60 parts per billion (ppb) and 70 ppb would have been more restrictive than the current standard of 75 ppb promulgated on March 27, 2008. In defense of this action, the Obama administration stated that, during this critical time of economic recovery, regulatory burdens and uncertainties should be reduced and implementation of a new standard that will soon be reconsidered anyway should not be supported. As a result, a new ozone standard is not expected until 2013. For more information, contact Roger Brower at 410.312.7907 or rbrower@zephyrenv.com.

EPA Proposes Secondary NAAQS for SO₂ and NO₂

On July 12, EPA proposed to establish secondary national ambient air quality standards (NAAQS) for SO₂ and NO₂ identical to the recently adopted 1-hour primary (health-based) NAAQS for these pollutants (100 ppb for NO₂ and 75 ppb for SO₂). According to EPA, even though achieving the levels of the new 1-hour health-based standards is not specifically protective of ecosystems, it will reduce harmful acidification of sensitive lakes and streams — a goal of the secondary, welfare-protective standards. With the addition of the new 1-hour secondary standards, EPA proposes to retain the current 3-hour SO₂ secondary standard and the current annual NO₂ secondary standard. For more information, contact David Cabe at 512.879.6644 or dcabe@zephyrenv.com.

EPA Confirms Modeling Needed to Designate 1-Hour SO₂ Standard Attainment

On September 21, EPA asked for public comment on draft guidance for States on how to implement the 1-hour SO₂ NAAQS. One of the key components of this guidance is EPA's controversial position, first introduced months ago in the preamble to the new NAAQS rule, that, in addition to air quality monitoring data, atmospheric dispersion modeling must be used in determining an area's attainment status with respect to the standard. This approach is unlike the longstanding EPA practice for other pollutants, for which monitoring data alone have been deemed sufficient to demonstrate an area's attainment. Many states have now started

conducting 1-hour SO₂ modeling in anticipation of the first deadline for submittal of state plans to EPA for bringing areas into attainment. For more information, contact Bill Jones at 410.312.7910 or bjones@zephyrenv.com.

EPA No Longer Supports Presumptive Emission Offset Ratios for PM_{2.5}

In response to a petition for reconsideration granted by the EPA on July 21, the agency issued a change in policy stating that it would no longer consider the preferred emission offset ratios provided in the preamble to the 2008 final rule for PM_{2.5} New Source Review program implementation to be presumptively approvable in the permitting of new or modified sources in PM_{2.5} nonattainment areas. Upon re-examination, EPA found that the original preferred ratios are not sufficiently representative of conditions in all areas of the country. EPA's new policy is that any offset ratio(s) involving PM_{2.5} precursors submitted by a state to EPA for approval for use in the state's PM_{2.5} nonattainment permitting program must be accompanied by a technical demonstration that shows the net air quality benefits of such ratio(s) for the PM_{2.5} nonattainment area. For more information, contact Lou Corio at 410.312.7912 or lcorio@zephyrenv.com.

EPA Proposes New Air Emissions Standards for Oil and Natural Gas Operations

On August 23, EPA proposed extensive changes to new source and hazardous air pollutant (HAP) emissions standards for crude oil and natural gas production, transmission, storage, and distribution facilities. The proposed new source standards will tighten existing VOC and SO₂ emission control requirements for natural gas processing plants and create new requirements for VOC and SO₂ emission sources at oil and gas production, transmission, and distribution facilities. The proposed HAP standards will expand emission control requirements to certain oil and gas production, transmission, and storage HAP emissions sources for which such requirements did not previously exist. For more information, contact David Mahler at 410.312.7909 or dmahler@zephyrenv.com.

EPA Defers Regulation of Biogenic CO₂ Emissions

On July 20, EPA deferred for a period of three years the application of Prevention of Significant Deterioration (PSD) and Title V operating permitting requirements to biogenic carbon dioxide emission sources. The deferral applies only to carbon dioxide emissions from combustion or decomposition of biologically-based materials other than fossil fuels and mineral sources of carbon. Methane emissions from biogenic sources, as well as fossil-based carbon dioxide emissions from sources that combust a combination of biogenic and fossil-based materials, are still subject to PSD and Title V permitting requirements. EPA intends to undertake rulemaking to determine how biogenic carbon dioxide emissions should be regulated. For further information, contact David Mahler at 410.312.7909 or dmahler@zephyrenv.com.

EPA Amends Chemical Data Reporting Requirements

On September 15, EPA amended the Toxic Substances Control Act (TSCA) chemical data reporting rule to increase the frequency from every five years to every four for reporting chemicals data, beginning with the 2012 submission. In addition, the rule change lowers reporting thresholds — companies that manufacture or import more than 25,000 pounds of a chemical are now required to also report on the processing and use of the chemical if they process or use more than 100,000 pounds of that chemical in Reporting Year (RY) 2012. This threshold will be subsequently lowered to 25,000 pounds beginning with RY2016. In addition, the reporting threshold for manufacture or import of certain chemical substances of particular concern is lowered to 2,500 pounds. Finally, all reporting will be required electronically, using the EPA's Central Data Exchange. For more information, contact Kimberly Brandt at 512.879.6641 or kbrandt@zephyrenv.com.

EPA Proposes Changes to Regulation of Hazardous Secondary Materials Intended for Reclamation

On July 22, EPA proposed to revise the Resource Conservation and Recovery Act (RCRA) definition of solid waste (DSW) to remove the exclusion from the DSW of certain particularly hazardous secondary materials that are to be transported offsite for reclamation. EPA believes that the current exclusion from the DSW for transport of certain chemicals for reclamation poses risks to health and the environment, because it has unintentionally resulted in more materials being discarded than reclaimed. The proposed revision would require that these transfer-based hazardous secondary materials be managed in accordance with current RCRA Subtitle C requirements, except that generators may store these materials up to one year without a RCRA permit provided that the generator makes legitimate plans for reclamation and documents those arrangements in a reclamation plan. For more information, contact Betty Moore at 512.879.6622 or bmoore@zephyrenv.com.

EPA Proposes Rule to Advance the Use of Carbon Capture and Sequestration

On August 4, EPA proposed to revise regulations for hazardous waste management under RCRA to conditionally exclude from the definition of hazardous waste CO₂ streams that are injected for geologic sequestration into wells designated for this purpose under the Safe Drinking Water Act (SDWA). EPA's intent in proposing this rule is to advance the use of carbon capture and sequestration technologies by providing regulatory certainty to industries considering their use, while protecting public health and the environment. The proposed rule complements previous EPA rulemakings, including final rules under the Clean Air Act that require reporting by facilities that capture or inject CO₂ streams and SDWA regulations that ensure that wells used for geologic sequestration of CO₂

are appropriately sited, constructed, tested, monitored, and closed. For more information, contact Lou Corio at 410.312.7912 or lcorio@zephyrenv.com.

state news

EPA Poised to Reclassify Baltimore Area as a Serious Ozone Nonattainment Area

Based on a review of air quality monitoring data, EPA, on September 1, proposed to determine that the Baltimore area, which has been a moderate ozone nonattainment area under the 1997 8-hour ozone NAAQS, did not attain this standard by the deadline of June 15. If EPA finalizes this determination, the Baltimore area will be reclassified as a serious 8-hour ozone nonattainment area with respect to the 1997 8-hour ozone NAAQS. However, due to the long history of ozone nonattainment in the Baltimore area, the State's current rules — rules addressing Reasonably Available Control Technology, enhanced inspection and monitoring, new source review, and emissions offsets — are generally as stringent or more stringent than measures normally applied to serious ozone nonattainment areas. As such, it is unlikely that the serious nonattainment designation will have any material effect on the regulation of industrial sources of ozone precursor emissions in the Baltimore area. For more information, contact Lou Corio at 410.312.7912 or lcorio@zephyrenv.com.

Proposed Maryland Rule Changes to Remedy Deficiency in Power Plant Permitting Rules

On August 4, EPA proposed to approve rule changes submitted by the Maryland Department of the Environment (MDE) regarding preconstruction permitting requirements for electric generating stations (EGSs) required to receive a Certificate of Public Convenience and Necessity (CPCN) from the Maryland Public Service Commission (PSC) before commencing construction or modification. The PSC has historically regulated utilities doing business in Maryland, and the current EPA-approved regulations exempt all constructed/modified EGSs from MDE's preconstruction permitting regulations. However, these regulations do not preserve MDE's permitting authority for EGSs that are not required to obtain a CPCN (e.g., projects resulting in emission increases of less than one ton per year). To remedy this deficiency, the proposed rule changes requires EGSs to obtain a preconstruction permit from the MDE when a CPCN is not required under the PSC regulations, thus allowing Maryland's programs for the permitting of EGSs to meet applicable requirements of the Clean Air Act and Federal regulations. For more information, contact Lou Corio at 410.312.7912 or lcorio@zephyrenv.com.

TCEQ Increases Title V Permit Fees

On August 5, the TCEQ formally adopted rule changes that will increase the fees Title V permittees pay each fiscal year (FY). As required by EPA, fees must cover the direct and indirect costs of

administering the Title V operating permits program; however, the current fee structure will not be sufficient to totally fund the Title V program beyond FY 2011. The new fee schedule, which will go into effect FY 2012, will eliminate the current adjustment for carbon monoxide annual emissions and will be based on \$25 per ton of actual emissions, adjusted by the Consumer Price Index with a cap of \$45 per ton. For more information, contact Ed Fiesinger at 281.668.7353 or efiesinger@zephyrenv.com.

TCEQ Proposes Stricter Controls on DFW Storage Tanks

On June 24, the TCEQ formally proposed stricter controls on volatile organic compound (VOC) storage tanks in the Dallas-Fort Worth (DFW) ozone nonattainment area. Similar to controls now in place in the Houston-Galveston-Brazoria (HGB) nonattainment area, the proposed rules would impose control requirements on upstream crude oil and condensate tanks. However, the rules would be more stringent than the HGB rules, requiring 95-percent control of VOC emissions from tanks with uncontrolled VOC emissions of more than 25 tons per year. Adoption is scheduled for November 16 and the DFW compliance date is proposed for December 1, 2012. For more information, contact Ed Fiesinger at 281.668.7353 or efiesinger@zephyrenv.com.

TCEQ Proposes Stricter VOC Controls on Solvent-Using Processes

On June 24, the TCEQ formally proposed stricter controls on various surface coating processes in the Houston-Galveston-Brazoria, Beaumont-Port Arthur, and Dallas-Fort Worth nonattainment areas. The affected sources are flexible package printing, industrial cleaning solvents, metal furniture coatings, large appliance coatings, paper, film, and foil coatings, miscellaneous industrial adhesives, miscellaneous metal and plastic parts coatings, and automobile and light-duty truck assembly coatings. Adoption is scheduled for November 16 and the compliance date for the affected nonattainment areas is proposed for March 1, 2013. For more information, contact Ed Fiesinger at 281.668.7353 or efiesinger@zephyrenv.com. ☀

trenches >>> continued from page 2

In less than a day we had completed a thorough tour and photographic log of the site and had drilled down on the few property concerns that had arisen. I looked down at my watch to see that it read 4:00 p.m. local time. As fate would have it, the last of the local flights departed just after 5:00 p.m., leaving me to enjoy one last night in the company of my new local friends and the cool Pacific breeze. ☀

Eric Quiat, P.E.
Project Engineer

Wildfires — A Cycle of Loss and Renewal

Almost all of Zephyr's home state of Texas has been in exceptional drought for over a year. This has led to numerous large fires across the state; over 3.5 million acres have burned — an area larger than Connecticut. And, during the 2011 Labor Day weekend, the most destructive single fire in Texas history began outside of Bastrop, just 30 miles east of Austin.

Although there were fatalities, quick work by area emergency responders to evacuate threatened areas saved many lives. Still, over 1,600 families lost their homes, including family and friends of Zephyrites. One of our colleagues had no idea for over four days whether or not her home had burned to the ground. Although her story had a happy ending, our hearts go out to all the families who lost so much.

In addition to the human tragedy, the wildfire also had a profound effect on the environment. The Bastrop area is home to the Lost Pines forest, a population of loblolly pines thought to have originated in the Pleistocene era. The so-called "Lost Pines" refers to the fact that this forest is unlike any ecosystem in Central Texas and more closely resembles the pine forests of East Texas, hundreds of miles away. Bastrop State Park, a very popular and beautiful amenity within the Lost Pines forest, was decimated, with only 50–100 acres remaining untouched in the 5,900-acre park.

In addition to being a unique ecosystem in its own light, Lost Pines is also home to at least one endangered species, the Houston toad, and the vast majority of its habitat was destroyed. For those of us who have enjoyed the beauty of the Lost Pines forest, seeing it now is shocking and heartbreaking.

In this frame of mind I recently attended a dinner sponsored by the Westcave Preserve entitled "A Celebration of Children in Nature." By coincidence, one of my dining partners was a retired U.S. Forest Service Ranger, whose career included serving as Incident Commander for the gigantic fire in Yellowstone Park in 1988. This 1988 fire, which burned for several months, caused the only closure of the entire park in its history. A total of 793,880 acres or 36 percent of the park was affected by the wildfires.



Naturally, our conversation turned to the Bastrop fire. He reminded me that wildfires are a natural process and, while destructive, also start a cycle of renewal. He mentioned that tests of the forage (i.e., "food for grazing animals") after a wildfire shows a significant increase in the content of crude protein and other nutrients — in other words, the forage becomes more nutritious. Forests that have not experienced any wildfire in hundreds of years end up in a kind of unhealthy, and ultimately unsustainable, stasis.

I suppose it's somewhat reassuring to imagine that in nature, "everything works out in the long run." However, as John Maynard Keynes famously said, "The long run is a misleading guide to current affairs. In the long run we are all dead." I'm sure the families who lost their homes and so much of their lives would find little comfort in "improved prospects for nutritious forage."

At times like this, I like to remember that humanity is also part of nature, and that which is important to us and pleases us, is also natural. We are the most resilient species on the planet, and the way we overcome our challenges is with intelligence and mutual cooperation. In that spirit, we can bide our time and dream of better days for the people of Bastrop and for the Lost Pines forest.

Joe Zupan
President

Zephyr is a full-service environmental, health, and safety firm offering consulting, training, and data systems services to clients worldwide. We specialize in air and water quality, waste management and cleanup issues, incident management, natural resources, and workplace and community safety.

Currents is published quarterly by Zephyr Environmental Corporation, is edited by David Cabe, and designed by Allen Griffith of Eye 4 Design. Current and past issues of this newsletter are available at our website. For more information about *Currents*, or to add your name to our subscription list, please email: currents@zephyrenv.com or visit www.zephyrenv.com.



Corporate Headquarters
2600 Via Fortuna
Suite 450
Austin, Texas 78746

PRSR STD
U.S.
POSTAGE PAID
AUSTIN, TEXAS
PERMIT NO.
1718

Visit Zephyr's web sites: www.zephyrenv.com and www.HazMatAcademy.com

flares >>> continued from page 1

can be achieved for vent gas streams with low heating values (approximately 300 BTU/scf) and ultra low flow rate conditions (i.e., high turndown rates) *provided that the steam and air assist rates are maintained at low levels*. Surprising to most flare operators though, the best DRE was achieved at or near the incipient smoke point (i.e., at the operating point at which the minimal amount of air or steam assist is needed to prevent visible emissions).

Although the 2010 TCEQ flare test conditions differed from 1983 EPA tests, results of the two studies are comparable. It was clear from the 1983 study that “over steaming” could affect flare performance, but it wasn’t until the 2010 study that these effects were rigorously addressed.

With the release of the 2010 study, operators are now faced with the dilemma of demonstrating how their flares will meet the seemingly competing regulatory demands for high DRE and minimal opacity. Unfortunately, current flaring rules don’t help; 40 CFR §60.18 addresses visibility, ignition of the flared gases, limits for tip velocity and flared gas heating value, but is silent on air and steam assist practices.

Of immediate concern to flare operators are policy issues arising from the results of the TCEQ study. Will EPA and states make changes to their rules to incorporate

new operating restrictions and other limits on flaring, and what will they be? It is now general practice for flare operators to prevent flare smoking by erring on the side of caution and using more steam rather than too little. Will regulatory agencies require this to change and how? The impact of such changes can be many, ranging from ratio controllers for flare vent gas flow and steam addition flow to flare turndown limits or staged flares for ultra low flow and high flow conditions. Additional expected changes could include measurement and characterization of all streams sent to a flare (steam, assist gas, and flared gas).

As a result of the 1983 and 2010 studies, the operation of flares to achieve high DREs and, at the same time, minimize visible emissions, has been found to be more complex than adherence to the few flare operating requirements of 40 CFR §60.18. However, the coming of age of remote optical sensing and other technological advances now provide both the regulator and regulated community with tools for demonstrating optimum operation of flares over the wide range of flare operating conditions that are faced by industry. The challenge then remains for regulatory agencies to develop clear and consistent rules for industry, incorporating the latest science into their flaring and vent gas control regulations. ✨

Ed Fiesinger
Principal