



# The Certified Environmental Professional

## The Newsletter of the Academy of Board Certified Environmental Professionals

<http://www.abcep.org>

August 2017

## WE WANT YOUR INPUT!

In September, watch for an email from the ABCEP Office with a link to a Newsletter survey. We want your input on topics of interest, how often would you like to receive the newsletter, and suggestions on other types of content - technical specialties, regulatory considerations, CEPs in Action, project and leadership profiles, etc.

This newsletter is only as strong as you help us make it.

Shari Cannon-Mackey, CEP, ENV SP  
Newsletter Editor

### Inside:

- Upcoming Newsletter Topics
- Call for Articles - *Ecosystem Restoration*
- Welcome New ABCEP Trustee
- Essay - *Controlling Carbon Dioxide Emissions by Direct Air and Air To Fuels Technology*
- Emergency Engines FAQ
- Now Accepting Nominations for *Emerging Environmental Professional Award* and the *Kramer Award for Environmental Excellence*

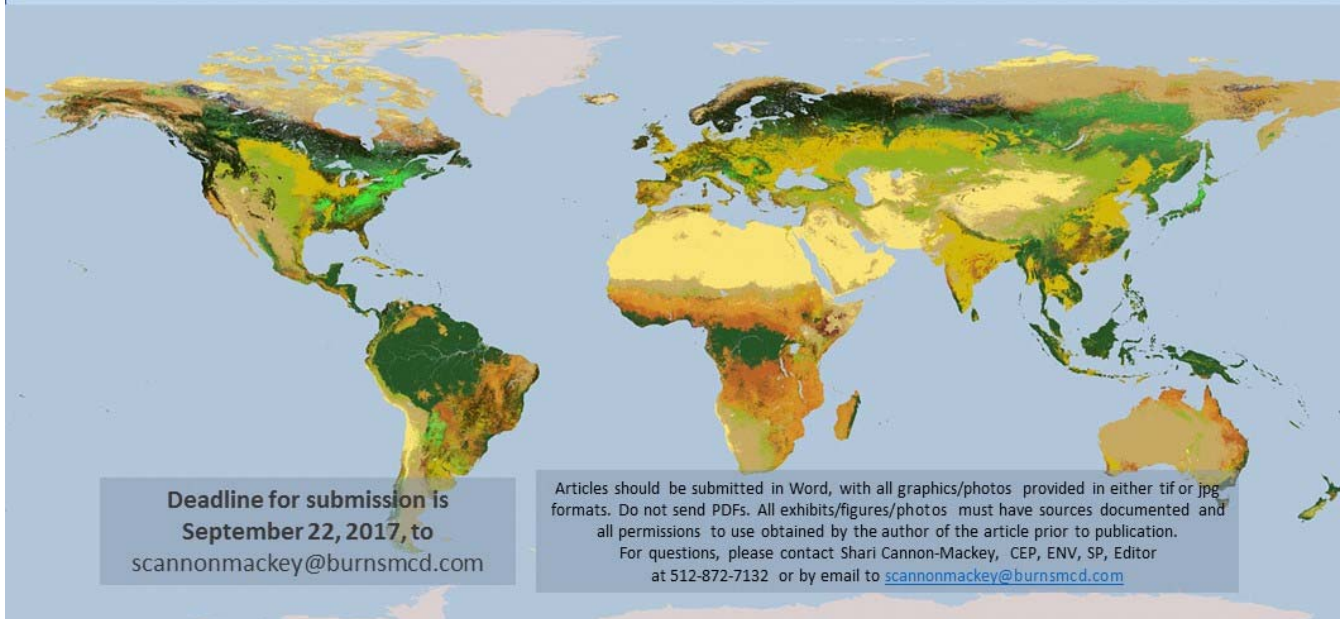
**Help us get the word out!  
Share this newsletter with  
your co-workers, clients,  
students and faculty.  
You don't have to be a CEP or  
CEP-IT to submit an  
article!**

## CALL FOR ARTICLES on Ecosystem Restoration

*The Certified Environmental Professional*  
the Newsletter of the Academy of Board Certified Environmental Professionals

**The September edition of *The Certified Environmental Professional* will showcase articles on Ecosystem Restoration.**

**We welcome a variety of perspectives on this topic including case studies, best practices, and innovation.**



**Deadline for submission is  
September 22, 2017, to  
[scannonmackey@burnsmcd.com](mailto:scannonmackey@burnsmcd.com)**

Articles should be submitted in Word, with all graphics/photos provided in either tif or jpg formats. Do not send PDFs. All exhibits/figures/photos must have sources documented and all permissions to use obtained by the author of the article prior to publication. For questions, please contact Shari Cannon-Mackey, CEP, ENV, SP, Editor at 512-872-7132 or by email to [scannonmackey@burnsmcd.com](mailto:scannonmackey@burnsmcd.com)

## NEWSLETTER TOPICS

We have chosen to highlight an area of practice or interest to CEPs in each newsletter; but articles on any topic are welcome at any time. Psssst...you don't have to be a CEP or CEP-IT to submit an article - we welcome input from the entire community! Pass this and future issues along to your colleagues - you never know who may have an interest.

If you have an idea for a new topic of upcoming article, please let me know.

Shari Cannon-Mackey, CEP, ENV SP; Editor; [scannonmackey@burnsmcd.com](mailto:scannonmackey@burnsmcd.com)

**SEPTEMBER - Ecosystem Restoration**

(due September 22, 2017)

**OCTOBER - Inland Lakes and Rivers**

(due October 20, 2017)

**NOVEMBER - Remediation**

(due November 17, 2017)

**DECEMBER - CEPs in the Construction Sector**

(due December 15, 2017)

## Please join the ABCEP Board of Trustees in welcoming our newest member!



The ABCEP Board of Trustees would like to introduce our newest Board Member - Audra Upchurch!

Audra has more than 14 years of experience managing environmental programs and projects, including National Environmental Policy Act (NEPA) compliance and document development, consultation, public outreach, and environmental management for various government and commercial clients.

Audra holds a BS in Forestry and a MS in Natural Resources, both from Virginia Polytechnic Institute and State University (Virginia Tech). She is currently pursuing a Master of Business Administration from Virginia Tech. Audra is a certified Project Management Professional and has been a Certified Environmental Professional since 2016.

Audra is a Program Manager with LMI in Tysons, Virginia. She manages staff in their Energy and Environment Program.

**KEEP STRONG  
AND  
MAINTAIN ON**



**Log on to  
CEP-EXPRESS  
today and  
take credit  
for all your  
hard work!**

## Essay - Controlling Carbon Dioxide Emissions by Direct Air and Air To Fuels Technology

**Michael W. Oakley, CEP-IT**

Much is being done to curb the seemingly uncontrollable release of heat trapping gases into our atmosphere; from standardized fuel efficiencies, to emissions testing, air permitting, and alternative energy production. According to the EPA global emissions data (2010), approximately 76 percent of all greenhouse gas (GHG) emissions are carbon dioxide released through the production and usage of fossil fuels, industrial processes, forestry, and agricultural operations. Methane contributes 16 percent, nitrous oxide makes up 6 percent, and fluorinated gases (F-gases) pitch in another 2 percent.

Because carbon dioxide is the largest contributor (by volume) to GHG emissions, most of the focus in remedial sciences and media outreach is directed at CO<sub>2</sub>. For the last century, trends in GHG emissions are generally upward, with an approximate 90 percent increase in CO<sub>2</sub> emissions since 1970. A majority of emissions are from energy production and usage, with agriculture and forestry coming in second place.

Strides have been made in renewable energy technology, but currently in the United States renewable energy (all sources) accounts for only 15 percent of the country's total energy usage. While efficiencies are steadily increasing and costs are marginally decreasing, green energy is limited by its viability commercially and its steep up-front investment for the average homeowner.

While most of the world continues to direct their attention to alternative energy sources, such as wind, solar, and biofuels, others are geared more towards immediate mitigation of our ambient air crisis. Recognizing the shortcomings of renewable energy on a commercial scale, a handful of companies are engineering carbon dioxide removal techniques from ambient air. This process of CO<sub>2</sub> removal has been coined "direct air capture."

While a full-scale direct air capture facility has not yet been implemented, there are several companies with working prototypes and scaled down versions of the technology. Carbon Engineering, based in Canada, is one company with a scalable version. The company currently has a pilot plant in Squamish, B.C. that removes approximately 1.5 tons of CO<sub>2</sub> from the air per day. While this

amount seems insignificant, it shouldn't be the volume removed that's impressive, but the technology used to remove it.

The basic process of Carbon Engineering's Air to Fuels (A2F) system starts by pulling air through plastic corrugated sheets wetted with a carbon absorbing material. The carbon atoms get absorbed into solution, generating carbon dioxide in solution. Technology to turn this collected carbon into usable fuels for transportation that is not feasible for electric conversion is still being developed; however, scientists at Carbon Engineering believe this to be a viable option for fueling airplanes and cargo vehicles.

Climeworks, a Swiss-based company, is already capturing atmospheric CO<sub>2</sub> and selling the product to various industries. Climeworks has constructed the first commercial scale direct air capture facility in Hinwil, Switzerland. The facility is powered by waste heat generated from a nearby waste incineration facility. The CO<sub>2</sub> generated is pumped into a nearby greenhouse operation, where yields have increased approximately 20 percent since the installation of the direct air system. The system is estimated to remove approximately 900 tons of CO<sub>2</sub> annually - about the same amount of CO<sub>2</sub> removed by 54 acres of mature trees.

With the global population trending upward, the need for renewable energy and carbon sequestration/direct air capture is greater than ever. The global population is currently 7.4 billion, a number which is estimated to rise to 9.9 billion by 2050. Direct air capture facilities, like the ones created by Carbon Engineering and Climeworks, can be constructed on land not suitable for development or agricultural uses.

### References:

<http://www.sciencemag.org/news/2017/06/switzerland-giant-new-machine-sucking-carbon-directly-air>  
<http://carbonengineering.com/>  
<http://www.climeworks.com/>  
<http://www.americanforests.org/explore-forests/forest-facts/>  
<https://www.epa.gov/ghgemissions/global-greenhouse-gas-emissions-data>  
<http://www.prb.org/Publications/Datasheets/2016/2016-world-population-data-sheet.aspx>

**Author - Michael Oakley is an Environmental Specialist and currently part of the Environmental Health and Safety team and Emergency Response Team at the State University of New York – Binghamton University.**



## NOW ACCEPTING NOMINATIONS FOR 2018

### *Nominate an Emerging* **Environmental Professional**



Know an Environmental Professional who has made a valuable contribution to the profession?

Someone who should be recognized for their leadership, professional involvement and commitment to the environmental profession?



Nominate them today for this prestigious award!

Email [office@abcep.org](mailto:office@abcep.org)  
or visit

[www.abcep.org/blogs/awards](http://www.abcep.org/blogs/awards)

#### Candidates must:

- Not be older than 35 years old.
- Possess a bachelor's degree from an accredited university in an applicable field.
- Be a full-time environmental professional.
- Have a minimum of 5-years professional experience in a position of responsible charge.



# Emergency Engines FAQ

Amanda Breitling, PG, REM

Air quality compliance for emergency engines can often be overlooked at institutional facilities such as hospitals, universities, and corporate campuses. This article is intended to address the most frequently asked questions about emergency engine air quality compliance in order to draw attention to potential liabilities.

## Emergency Engines FAQ: Title V

**Q:** Can emergency engines really trigger the need for a Title V permit?

**A:** Yes, emergency engine Potential to Emit (PTE) can be above an applicable Title V major source threshold. This is due to Federal guidance on emergency engine PTE that establishes 500 hours per year per engine as the default operating parameter when calculating emergency engine PTE. The PTE per pollutant is compared to applicable Title V major source thresholds. If the PTE for even a single pollutant is above a Title V major source threshold, then a Title V permit is required.

In attainment areas, the Title V major source threshold is 100 tons per year (TPY) per pollutant. At 500 hours per year, the NO<sub>x</sub> PTE for a site wide aggregate of 19,900 kW (26,686 HP) of Tier 1 engines is greater than 100 TPY, as detailed in **Table 1**. State policy or nonattainment area status can drive Title V major source, and their associated aggregate kW thresholds, even lower. For example, in Texas, the default operating parameter when calculating emergency engine PTE is 876 hours per year per engine. At 876 hours per year, the NO<sub>x</sub> PTE for a site wide aggregate of 11,300 kW (15,154 HP) of Tier 1 engines is greater than 100 TPY. With older engines that are not Tier rated, the aggregate kW threshold can be even lower.

Table 1: Tier 1 Engines

Fuel Type	Engine Rating (kW)	Engine Rating (HP)	Annual Operations (hr/yr)	Emission Factor (lb/hp-hr)		Max Hourly Emissions (lb/hr)	Annual Emissions (TPY)
Diesel	5,000	6,705	500	0.0151	Tier 1	101.41	25.3532
	10,000	13,410	500	0.0151	Tier 1	202.83	50.7063
	19,900	26,686	500	0.0151	Tier 1	403.62	100.9056
	2,900	3,889	876	0.0151	Tier 1	58.82	25.7629
	5,700	7,644	876	0.0151	Tier 1	115.61	50.6374
	11,300	15,154	876	0.0151	Tier 1	229.19	100.3863

Although these scenarios might imply that there are hundreds of facilities unknowingly in need of Title V permits, that is not the case. Most states have a process by which a facility can voluntarily limit their operations in order to avoid Title V permitting and become a synthetic minor source. For emergency engines, all that needs to be done is limit the hours of operation in order to keep the PTE below the applicable Title V threshold. Without formal synthetic minor documentation, a facility with a PTE over a Title V major source threshold is subject to permitting and/or enforcement actions.

Continued from page 6

## Emergency Engines FAQ: Federal Regulations

**Q:** What New Source Performance Standards (NSPS) Subpart IIII, NSPS Subpart JJJJ, and National Emissions Standards for Hazardous Air Pollutants (NESHAP) Subpart ZZZZ requirements apply to emergency engines?

**A:** Institutional emergency engines located at an area source\* of Hazardous Air Pollutant (HAP) emissions, that were ordered before June 12, 2006, are exempt from NESHAP Subpart ZZZZ per the conditions of 40 CFR 63.6585(f)(3). Institutional emergency engines located at an area source of HAP emissions, that were ordered on or after June 12, 2006, must comply with NESHAP Subpart ZZZZ by complying with either NSPS Subpart IIII for compression ignition (CI) engines or NSPS Subpart JJJJ for spark ignition (SI) engines, as applicable.

NSPS Subpart IIII applies to CI engines ordered after July 11, 2005 and manufactured after April 1, 2006. NSPS Subpart JJJJ applies to SI engines ordered after June 12, 2006 and manufactured on or after January 1, 2009 that are greater than 19 kW (25 HP) (see **Figure 1**).

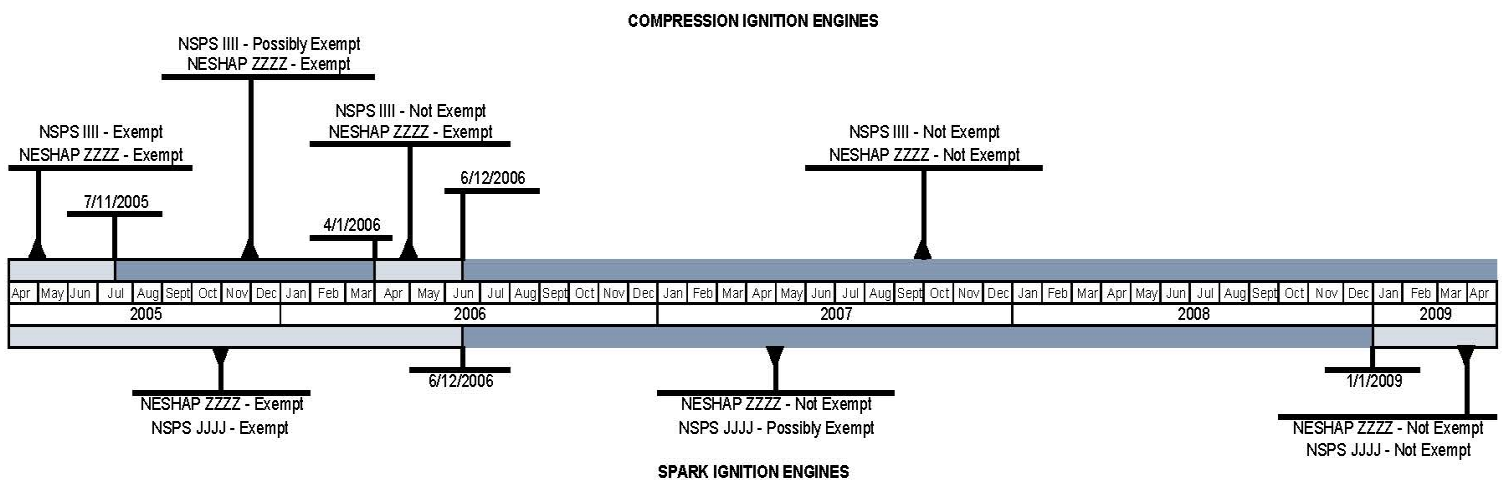


Figure 1: NSPS & NESHAP Requirements - Compression and Spark Ignition Engines

In general terms, engines that are required to comply with NSPS Subpart IIII or NSPS Subpart JJJJ must meet the emission limits of their appropriate Tier rating, purchase certified engines or conduct certification testing, have a non-resettable runtime meter, use compliant fuel, keep detailed maintenance records, maintain and operate the engines according to manufacturer's instructions (in order to minimize pollution), and follow annual operating restrictions for non-emergency operations. No notifications or reports are currently required.

\*Under the NESHAP regulations, facilities are categorized as either major sources or area sources of HAPs. A facility is a major source of HAPs if it has the PTE more than 10 tons per year (TPY) of a single HAP or 25 TPY of aggregate HAPs. Institutions are not typically major sources of HAPs nor can easily limit operations to avoid being a major source.

## Emergency Engines FAQ: Emergency vs. Non-emergency Operations

**Q:** What is the definition of "emergency", and are non-emergency operations, such as peak shaving, allowed?

**A:** Under the Federal regulations that most institutional emergency engines are subject to (NESHAP Subpart ZZZZ, NSPS Subpart IIII, and NSPS Subpart JJJJ), an emergency is when electric power from the normal power source is interrupted, or when a pump is required to operate in response to a flood or fire. So, determining when a situation is an "emergency" can be made on a facility and event-specific basis. Under NESHAP Subpart ZZZZ, NSPS Subpart IIII, and NSPS Subpart JJJJ, there is no time limit on the use of emergency engines in emergency situations.

**Continued from page 7**

There is, however, a limit on the amount and type of non-emergency operations. Up to 100 hours per year per emergency engine is allowed for specific non-emergency operations, such as recommended testing and maintenance. In addition, up to 50 hours per year, of the total 100 hour per year limit, can be used to supply power as part of a financial arrangement with another entity IF an emergency engine is dispatched by a local transmission and distribution operator using reliability/emergency protocols in order to avert voltage collapse or line overload, and the power is used on-site or within the local transmission and distribution system. Non-emergency operations that are specifically not allowed include peak shaving, demand response, and any other activity that generates income and does not meet the criteria listed above.

## **Emergency Engines FAQ: Emergency Demand Response**

**Q:** How do I interpret and apply the EPA memo regarding vacatur of allowed emergency demand response operations?

**A:** EPA issued a memo on April 15, 2016 providing guidance on their application of the May 1, 2015 decision by the U.S. Court of Appeals for the District of Columbia Circuit to vacate the NESHAP Subpart ZZZZ, NSPS Subpart IIII, and NSPS Subpart JJJJ allowances for demand response operations for emergency engines. Specifically 40 CFR 60.421(f)(2)(ii)-(iii), 60.4243(d)(2)(ii)-(iii), and 63.6640(f)(2)(ii)-(iii):

*(ii) Emergency stationary Reciprocating Internal Combustion Engines (RICE) may be operated for emergency demand response for periods in which the Reliability Coordinator under the North American Electric Reliability Corporation (NERC) Reliability Standard EOP-002-3, Capacity and Energy Emergencies (incorporated by reference, see §63.14), or other authorized entity as determined by the Reliability Coordinator, has declared an Energy Emergency Alert Level 2 as defined in the NERC Reliability Standard EOP-002-3.*

*(iii) Emergency stationary RICE may be operated for periods where there is a deviation of voltage or frequency of 5 percent or greater below standard voltage or frequency.*

Emergency demand response programs are designed to help decrease the likelihood of rolling black-outs during an energy emergency by decreasing the power demand on the electrical grid. Participants commit to decrease their power consumption from the electrical grid during a “declared” energy emergency by decreasing overall power use, replacing power consumption from the grid with local electrical sources, or a combination of both.

The practical application of the memo is that, as of May 1, 2016, emergency engines could no longer participate in emergency demand response programs and maintain exemptions from Federal emissions standards. A choice must be made by demand response program participants utilizing emergency engines whether to forego their NESHAP and NSPS exemptions, lower engine emissions to the same standards as non-emergency engines, and remain part of an emergency demand response program OR retain their NESHAP and NSPS exemptions, keep engine emissions the same, and forego program participation. Each campus and engine will have unique engineering, business, and compliance cases to make for their application of the Federal regulations and interactions with the local electrical grids. EPA tools for compliance are located at <https://www.epa.gov/stationary-engines>.

**Author** - Amanda Breitling, PG, REM, is a Department Manager with Burns & McDonnell in their Fort Worth office. In her 17 years of experience, she has performed due diligence and compliance assistance for air, hazardous waste, and water media. She has written numerous pollution prevention documents and managed or performed over 350 environmental site assessments as well as subsurface investigations for real estate transactions. In addition, she has prepared numerous New Source Review and Title V air permit applications, as well as Title V compliance audits.



## NOW ACCEPTING NOMINATIONS FOR 2018

### NOMINATE AN ENVIRONMENTAL PROFESSIONAL



## Dr. Richard J. Kramer, CEP Memorial Award for Environmental Excellence



#### NATIONALLY RECOGNIZE EXTRAORDINARY ACHIEVEMENTS, LEADERSHIP, AND SPIRIT OF A CERTIFIED ENVIRONMENTAL PROFESSIONAL

Dr. Kramer's involvement in ABCEP spanned more than two decades. In 1982, he was the 31st person to earn the CEP designation. He served on the Academy's Certification Review Board from 1985 to 1999, when he resigned to become the first President of the Academy. Dick began his career in the environmental profession in 1972. For many years he was head of the environmental planning and NEPA office for the Camp Pendleton Marine Corps Base in California.

The ABCEP Trustees are responsible for selecting the winner of the award. More than one award may be given each year. The award was presented for the first time in 2004, to commemorate the 25th Anniversary of the creation of the Certified Environmental Professional designation by the National Association of Environmental Professionals (NAEP) and the 5th Anniversary of the creation of the ABCEP, which was created in 1999 to oversee the CEP program.

**All ABCEP Members are eligible for the Award  
& must be nominated by an active ABCEP Member.**

**Nomination Deadline: February of each year**

SEND NOMINATIONS TO [OFFICE@ABCEP.ORG](mailto:OFFICE@ABCEP.ORG) OR VISIT [WWW.ABCEP.ORG/BLOGS/AWARDS](http://WWW.ABCEP.ORG/BLOGS/AWARDS)



## The Certified Environmental Professional

The ABCEP Newsletter is published monthly and is intended to be a:

- ◆ Communication vehicle for the Board of Trustees and ABCEP Committees to inform and engage with CEPs and CEP-ITs on current activities within ABCEP and its future direction.
- ◆ Forum to report on current and emerging environmental issues, regulation and policy changes, and professional trends.
- ◆ Forum to provide professional guidance and advice to expand the professional growth and knowledge of members.
- ◆ Means for members to communicate with one another on current accomplishments, interesting projects, or lessons learned on the job with new approaches and successful problem solving solutions.
- ◆ Platform to acknowledge, highlight, and welcome active CEPs and CEP-ITs.

All members are encouraged to be active in their profession and affiliated professional organization.

If you have an article or a topic of interest that you would like presented in *The Certified Environmental Professional* newsletter please submit your completed article or topic request to Shari Cannon-Mackey, CEP ENV SP, at [scannonmackey@burnsmcd.com](mailto:scannonmackey@burnsmcd.com); or to Andrea Bower at [office@abcep.org](mailto:office@abcep.org).

Thank you,

*Shari Cannon-Mackey, CEP, ENV SP*  
Editor

What are CEPs and CEP-ITs doing in your area?  
Let us know - no event is too small nor too big!  
Send your photos and descriptions to  
Shari Cannon-Mackey at [scannonmackey@burnsmcd.com](mailto:scannonmackey@burnsmcd.com)