CONTAINED GAS RULE CHANGES
A LAYMEN’S DISCUSSION ON A COMPLICATED TOPIC

TODAY’S OXIDIZERS BECOMING TOMORROW’S INCINERATORS?

A CPI WHITE PAPER ON THE EPA CONTAINED GAS RULE CHANGE

New EPA regulation classifies “oxidizers” as “incinerators” meaning if this is not changed, the emissions standards and regulatory requirements associated with operating oxidizers become much more complex because incineration rules specify extensive recordkeeping, monitoring and reporting requirements.
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Stay tuned as we continue to keep you informed and help you respond to those changes in ways that keep you in compliance
Introduction

Last month, when EPA released new rules affecting the combustion of solid wastes most readers failed to notice a subtle change in the regulatory definitions that could have a huge effect on industry. Unless the Agency changes the definition again, many facilities that use thermal and catalytic oxidizers to control VOC and HAP emissions may be classified as “incinerators” in the future. If that happens, the emission standards and regulatory requirements associated with operating oxidizers will become much more complex.
Background

While many people use the words “incinerator” and “oxidizer” more or less interchangeably, the words have very different regulatory implications. Incinerators are used to burn solid or liquid wastes and they fall under specific regulations that apply to the burning of solids or liquid wastes. Specific regulations cover the incineration of Municipal Solid Wastes, Sewage Sludge Wastes, and other Commercial and Industrial Solid Wastes, for example.

In terms of EPA rules, a solid waste doesn’t actually have to be a solid. Some liquid wastes are defined as solid wastes and thus burning of these liquids is regulated by solid waste incineration rules. Not only can solids be solid wastes and liquids (can) be solid wastes. Just for additional confusion; EPA also defines waste gases enclosed in a container as solid wastes. Thus, the residual gas contained in a discarded propane cylinder can be considered a “solid waste” under the new rule. This is the “contained gas” definition that is part of the “Non-Hazardous Secondary Material” rule. It’s this rule one would study to find out what is and isn’t a solid waste.

So how about the gas in a duct that leads from process unit to a control device: Is that a contained gas and thus defined as a solid waste? Up to now, the answer to that question was no. In years past, EPA specifically said that gases in pipes and ducts were not “contained gases” and were thus not solid wastes. Since those gases were not solid wastes, the control devices used to destroy the pollutants in the exhaust stream were not classified as incinerators.

In time, the terms “thermal oxidizer” and “catalytic oxidizer” fell into common usage. Those terms avoided use of the word “incinerator” which was both regulatory significant and which carried a certain negative connotation in terms of public opinion.
Background continued

In fact back in the 1980’s and early 1990’s CPI consulted with customers to start eliminating the word “incinerator” from permit language and notifications and to replace this with the word “oxidizer” Both effectively do the same thing, that is to burn waste at high temperatures. But an “oxidizer” became commonplace identification due following the chemical reaction of “oxidizing hydrocarbons” through a exothermic reaction similar to below: $\text{CxH}_x + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O} + \text{heat}$

So, to sum up:

- Traditionally the term “oxidizer” has been used to describe devices which destroy gaseous hydrocarbons (VOCs & HAPs) contained in the exhaust gas stream from a process by promoting oxidation through thermal or catalytic means.

- “Incineration” is a term that has been used to describe the process of destroying solid wastes by promoting oxidation through thermal or catalytic means.

These have been two distinct regulatory tracts, with much different requirements.

In the vast majority of cases, operators of thermal and catalytic oxidizers have not had to go through formal training or certification requirements and the recordkeeping, monitoring and reporting requirements associated with thermal and catalytic oxidizers have been minimal. The design criteria associated with oxidizers and the permitting process necessary to install an oxidizer have also been relatively uncomplicated.

The opposite is true, in every regard, when it comes to incinerators. Regulations spell out complex, time consuming and expensive training and certification requirements necessary to operate an incinerator. Incineration rules specify extensive recordkeeping, monitoring and reporting requirements. Regulatory agencies may specify complex design criteria for incinerators and the path to permitting an incinerator can be tortuous.

Not to mention in the permitting process the word Incinerator conjures up hazardous wastes or garbage. In a world of public opinion, any attempt to permit an incinerator will assuredly be met with objection from several environmental groups.
Earlier this year, EPA promulgated new rules to regulate the combustion of fuels in industrial boilers. At the same time, the Agency issued rules that will cover the incineration of solid wastes as well as rules that revise the definition of a solid waste. As part of the new, revised definition of solid waste, EPA omitted the “contained gas” language.

Why is that omission significant? Because the “contained gas” language, as we have seen, implies that some gases are solid wastes (those that are enclosed in a container of some kind), while gases flowing through ducts are not solid waste. Absent that language, the definition implies that all gases will be solid wastes and thus that all oxidizers used to destroy those gases will be incinerators.

The big question is: was that omission an oversight or was it an intentional move on EPA’s part? If the Agency made a mistake, it can easily correct the error by modifying the rule in the coming months. If the Agency deliberately made the change, it is almost certain that one or more industrial groups will challenge the change in court.

It will likely be a while before the issue is decided in final form. For purposes of this white paper, it will be assumed that oxidizers used to control VOCs become incinerators under federal rules. What will that mean to affected facilities?
Incineration Requirements

Typically, oxidizers used to control VOCs must meet a minimum destruction efficiency of 90 to 95 percent, depending on a mixture of variables such as; where the facility is located, the type and quantity of VOC’s, are these classified as HAP’s and what industry the process is considered.

Operating an oxidizer under typical operating permits is not very onerous. As example, an initial stack test is usually required to demonstrate that the oxidizer meets this destruction efficiency standard. Routine permit obligations may include temperature monitoring to verify that the oxidizer continues to operate properly during process production periods. Lastly, proof that regular manufacturer recommended maintenance has been performed. As regulatory requirements go these are not too difficult or time consuming to meet.

Crossing the line into the regulatory realm of incineration is quite another experience. Minimum destruction efficiencies of 98 to 99 percent are commonly applied to incinerators. Stack testing programs necessary to demonstrate compliance are more complex and costly. Rather than testing just to measure VOC destruction efficiency, for example, testing is often required to determine emission rates of specific compounds or classes of compounds, like aldehydes, poly-aromatic hydrocarbons and dioxins. This adds complexity to emissions testing and increases the cost of the test program. Most regulatory agencies also require more frequent testing of incinerators than they do of oxidizers.

The people who operate incinerators often must go through periodic training programs and be certified as qualified operators on a regular basis.

Incinerators also require more frequent inspections and more parameters must be monitored to ensure that the unit is functioning properly. A greater amount of documented maintenance activities is required to keep in compliance. Once slight out of range items are discovered immediate reporting and action plans may have to be filed with EPA. In some cases, as production stoppage could result until the issue is resolved and EPA completes an audit.
Planning for the Future

If today’s oxidizers are going to become tomorrow’s incinerators, operators are well advised to be prepared. The official scrutiny that comes along with the incinerator tag-name is intense, but the transition from one regulatory classification to another can be relatively painless if one plans ahead. Just follow these principles when designing your control strategy:

1) **Ensure that the control system is built to last.** The “test it and forget it” attitude that some facilities have regarding oxidizers just won’t do if these units are classified as incinerators. All parts of the system, from capture equipment, through the heat exchanger and combustion chamber must be designed robustly, so that the system performs as well in ten years as it did when the system was newly installed.

2) **Keep it simple.** The less moving parts and the more automation, the better. Fewer moving parts means less to go wrong. The more automation in the system, the easier it is to train and certify operators and the less chance there is of an operator making a critical error.

3) **Get the support you need.** With all of today’s communications tools, vendors can and should be able to keep track of critical system data and detect and diagnose potential problems before they become critical issues. Consider vendors that offer VPN communications to allow “factory supervision” of your system. This aids in quick troubleshooting and more direct path to a resolution of a potential problem.

4) **Understand the rules.** Most oxidizers used to control VOC & HAP emissions are only subject to state-level regulations. Incinerators, on the other hand, are subject to both state and federal rules. This means that there is much more official attention paid to incinerators. Federal scrutiny is almost always more exacting than it is at the state level and the penalties for non-compliance at the federal level – even for purely paperwork violations – are more severe. Accordingly, incinerator operators are well-advised to become intimately familiar with all aspects of the rules that apply to them.
Conclusion

At Catalytic Products International, we’re paying close attention to today’s rapidly changing regulatory requirements. We’ll continue to keep you informed and – as always – we’re ready, willing and able to help you respond to those changes in ways that keep you in compliance as reliably, easily and economically as possible.

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