
**Accepting the Resource Conservation
Challenge: Clearing Permitting Barriers for
Acceptance of Alternative Fuels**

Prepared by:

Curtis Lesslie • Principal Consultant

Trinity Consultants
25055 West Valley Parkway
Suite 101
Olathe, KS 66061
www.trinityconsultants.com
(913) 894-4500

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ABSTRACT

With the surge in fuel prices in the past two years, industry has initiated efforts to utilize various alternative fuels that may have historically been overlooked. Material with energy value such as scrap tires, waste plastics, tallow, bone meal, bulk solids, auto fluff, wood waste, etc. are now being sought out for use as lower cost alternative fuels. Once an alternative fuel source is identified, the daunting maze of environmental permitting begins. This paper will present examples of the types of environmental permits needed for several alternative fuels projects such as minor source and major source construction permits, Title V Operating Permit modifications, as well as solid waste permits and hazardous waste permit modifications.

INTRODUCTION

Energy intensive manufacturing facilities are increasingly looking to alternative fuels as a way of offsetting the cost of using traditional fuels such as coal, natural gas, and fuel oil. Since the last oil crisis in the 1970's, industrial furnaces in particular have been using high energy content waste materials as alternative fuels. With the passage of RCRA hazardous waste regulations and the Clean Air Act's New Source Review (NSR) provisions in 1980, a number of new regulatory drivers were introduced which have become barriers to the use of alternative fuels. Regulatory requirements for performing an analysis and obtaining pre-construction permits made it difficult and expensive for new fuel types to be introduced. Throughout the 1990's, EPA's hazardous waste combustion strategy introduced additional pressure on waste combustion by first imposing the Boiler Industrial Furnace (BIF) regulations under the RCRA hazardous waste program in 1991, then by imposing Phase I of the NESHAP for Hazardous Waste Combustors (HWC MACT) in 1999. This strategy forced many hazardous waste combustion units to close, including many cement kilns that utilized hazardous waste as a substitute for coal and other fossil fuels. Phase II of the HWC MACT regulations, introduced in 2005¹ will result in the closure of still further combustion units; EPA estimates that 39 systems will close, including 8 liquid fired boilers and 2 coal-fired boilers.² While the BIF regulations recognized "bona fide energy recovery" activities, HWC MACT does not distinguish between burning for energy recovery and burning for destruction. Increased public participation efforts by EPA in combustion permitting during the 1990's resulted in numerous contentious permitting efforts that have galvanized the public's perception of waste combustion in general, so that efforts to permit the use of tire derived fuel or even to utilize recycled glass as an alternative raw material has resulted in extended public debates during the permitting process.

The NSR Reform rules, finalized in December 2002, have opened the door to the consideration of alternative fuels. Prior to NSR Reform, for those facilities on the List of 28 the test for determining if a Prevention of Significant Deterioration (PSD) permit was required for a desired "physical change or change in the method of operation" was simply a comparison of future potential emission minus past actual emission. EPA has historically determined that a change in fuel types constitutes a change in the method of operation unless the source was capable of accommodating the fuel prior to January 5, 1975 (see 40 CFR 52.21(b)(2)(iii)(e)(1)). Since many facilities do not operate at their

¹ 70 FR 59402, October 12, 2005

² 70 FR 59530, October 12, 2005

potential production rate on an annual basis, it is often difficult for processes with large potential emissions that operate at a much lower actual emission rate to remain below the permitting thresholds, even if no increase in potential emissions was being requested. NSR Reform released the strangle hold that PSD had placed on manufacturing facilities in the past by allowing a future actual to past actual emission rate comparison. This change in calculation methodology has allowed many facilities to consider fuel changes that would not have done so prior to NSR Reform.

In addition to NSR/PSD permitting, solid waste regulations may come into play when a facility wishes to accept waste material from off-site sources. Since there are no national solid waste regulations for activities such as solid waste collection, transport, transfer, and processing, they are only regulated at the state and local level. And, while most states have regulations defining the necessary permitting for these activities, each state handles these activities differently. For example, some require solid waste permitting for the acceptance and use of scrap tires (tire derived fuel), while others specifically exempt tire derived fuel from solid waste permitting requirements. For alternative fuels other than tires and biomass (wood waste), many states have not yet developed specific regulations, permitting procedures, or guidance documents because facilities have yet to request that the use of that fuel type.

Stated Goals of OSW's Resource Conservation Challenge

EPA's Office of Solid Waste has implemented the Resource Conservation Challenge in 2005. According to the EPA's Office of Solid Waste website devoted to the Resource Conservation Challenge (RCC), the goals of the program are to³:

- *Prevent pollution and promote reuse and recycling;*
- *Reduce priority and toxic chemicals in products and waste; and*
- *Conserve energy and materials.*

Two of these goals can be achieved by better utilization of potential energy sources that are all too often wasted due to air construction and operating permit language that is focused more on the names of fuel than the physical characteristics.

Efficient materials management is one RCC priority. It seeks to have the entities that produce the waste manage it in such a way as to:

- *Reduce the waste at its source;*
- *Promote recycling of the waste; and*
- *Encourage its beneficial reuse in an environmentally sound manner.*

Industrial non-hazardous wastes that can be recycled and reused are key to a successful resource conservation program. Typically not seen by the general public or part of their daily lives, these wastes:

- *Are generated in large volumes;*
- *Composed of lower risk materials; and*

³ <http://www.epa.gov/epaoswer/osw/conserv/index.htm>

- *Have single industry generation points.*

The beneficial use of these materials includes their safe storage, handling and use in products, resulting in such environmental benefits as:

- *Reduction in greenhouse gas emissions;*
- *Energy savings; and*
- *Fewer land disposal units.*⁴

The efforts of RCC have been hampered by the physical limitations that exist for certain high volume, high energy content waste streams, such as carpet. Transportation, storage and pre-combustion processing of a rolled up, and often wet, carpet is a physical challenge that has not been overcome in a cost effective manner yet. Tires present a similar challenge from a handling, transport and storage perspective, but whole tire handling and introduction to boilers and industrial furnaces is now a demonstrated alternative fuel. Most, though not all, full scale efforts to use whole tires as alternative fuel in cement kilns have been successful from a process and product quality perspective. With any alternative fuel, pre-combustion processing and handling leads to increased cost and reduces the likelihood that the material can be used. Alternative fuels that require extensive processing or handling are therefore only attractive when fossil fuel costs are higher than the total costs involved with additional handling or processing costs associated with alternative fuels. Furthermore, facilities are often unwilling to prepare environmental permit applications for multiple media without a significant and relatively certain payback. As with any fuel source, a sufficient supply of the alternative fuel must also be available to warrant undertaking the project.

Unjustified concern by the public and environmental groups also inhibits the utilization of alternative fuels and raw materials. In some cases, opposition groups continue to support the land disposal of potentially viable alternative fuels and raw materials due to concerns about emissions even though it has been demonstrated that the proposed alternative fuels result in a reduction in emissions relative to traditional fuels that they are replacing. The historic PSD approach of comparing future potential emissions to past actual emissions often dramatically overstated the actual emissions resulting from a requested physical or operational change. To support the continued use of coal combustion over tire derived fuel is ridiculous and results from a misunderstanding of the emissions resulting from fossil fuel. Similarly, to discourage the use of alternative fuels and raw materials as a class simply because they are derived from a solid waste stream is counterproductive and wasteful, if it can be demonstrated that emissions of HAPs and criteria pollutants are not significantly impacted by use of the alternative waste derived fuel.

Many air permits have been issued with specific “approved” fuel types, such as: “The facility can use coal, petroleum coke, used oil, natural gas, and fuel oil”. This language allows the facility the flexibility to utilize any of the fuels specifically listed, but does not allow for other fuels. That is, EPA has determined that a change in fuel type not previously listed in a facility’s air construction permit is a “change in the method of

⁴ <http://www.epa.gov/epaoswer/osw/conservation/priorities/bene-use.htm>

operation” requiring evaluation under the construction permitting rules, and as mentioned previously, the result is often that a PSD permit is required. Consequently, designation of acceptable fuel types by name rather than fuel specifications ultimately restricts fuel flexibility beyond the specific fuels identified by omitting potential fuel types that would result in little or no change in actual emissions. In fact, many alternative fuel types now being considered for use would result in lower emissions than traditional fuels.

Following is a discussion of flexible fuel language that is recommended to allow the greatest flexibility possible, based on the existing permits held by the facility.

For facilities currently permitted under HWC MACT– Utilize current specification for hazardous waste fuels for all fuel types. That is, ensure that the permit language allows any fuel meeting the metals and chlorine feedrate limits allowed by the HWC MACT notification of compliance.

For facilities that are not subject to HWC MACT, the following options are recommended:

1. Fuel specifications option

Utilize sound science to document that emissions are not predicted to change or that emissions are predicted to decrease from the new fuel.

Develop specifications – suitability for combustion, metals and chlorine content, etc.

2. Fuel category option – based on specification

Develop specification, then use it to develop categories. Categories would simply provide an easier way to describe what is allowed to be used.

3. Emissions monitoring options –

Establish emission limits and utilize continuous emission monitors for gaseous criteria pollutants (SO_x, NO_x, and CO) to demonstrate that emissions are less than the established caps.

Facilities with Existing Hazardous Waste Combustion Permits

RCRA permits typically specify hazardous waste codes, storage and treatment that can occur at the site. As hazardous waste combustion permitting has matured, the RCRA approval process for the types of waste that can be combusted has moved towards demonstration of worst case organic constituent destruction capabilities for organics, allowing the acceptance and combustion of any waste with organic constituents that are less difficult to destroy and maximum metals and chlorine/chloride limits for the remaining components. This approach has worked well from a RCRA and HWC MACT perspective. RCRA permitted facilities that utilize alternative waste derived fuels have historically gotten little attention from an air permitting perspective, having already demonstrated a worst case fuel specification regardless of what the fuel is named. With respect to potential emissions of regulated pollutants, the best possible permit language

(from the facility's perspective as well as the regulatory agency's) should be focused on the characteristics of the fuel rather than the name of the fuel. Well written permit limits based on fuel specifications are readily demonstrated by laboratory analysis, which provides comfort for both parties as well.

Complications have been noted recently between RCRA, HWC MACT, PSD and Title V where a facility has gone through PSD permitting to account for a new alternative fuel type. The Part 70 (air operating permit provisions) provisions dictate that a PSD permit is a major change, requiring the Title V permit to be updated within one year of initiating the change in operation allowed by the PSD construction permit. If the Title V permit contains a specific prohibition that is relaxed by the PSD permit, a revised Title V permit must be issued before the change in operation can be implemented. This permitting conflict prevents a facility from implementing a change even though the rigors of PSD have been successfully completed. It continues to be a challenge to work with multiple state permitting groups to harmonize allowable fuels, and various operating parameter and emission limits. Many states have different groups responsible for RCRA hazardous waste, RCRA solid waste, Title V and air construction permitting. Since multiple permits can be issued to control the acceptance, storage, process, and use of certain fuel types, multiple permitting engineers in multiple programs at the state agency are involved, each responsible for assuring compliance with their permit of interest. It is essential to coordinate efforts and communication among the permitting staff in each program, particularly the combustion staff, to achieve issuance of a permit with language that sufficiently accommodates the language in the corresponding permits issued by the agency while also allowing future changes resulting from submittal of notification of compliance documents.

Facilities with PSD and/or Title V Operating Permits Denoting Fuel Types

Title V operating permits and air construction permits typically specify the fuels that can be accepted by category rather than by the characteristics of the fuel. Categorical listing of acceptable fuel types ultimately limits the use of new fuels in the future, even if there is no potential change in emissions, simply because the new fuel type was not named in the permit as an accepted fuel for the specified emission rates. This artificial limitation may ultimately result in a facility's continued use of a more polluting fuel type rather than going through the permitting exercise needed to add a new fuel category.

CONCLUSION

As more facilities break down the barriers to alternative fuels and develop more extensive data sets comparing emissions while utilizing the various available fuels, both traditional and alternative waste derived, permitting agencies are likely to impose fewer regulatory hurdles for alternative fuels. Additional public support by EPA for the use of alternative fuels would greatly increase the public's acceptance of these projects, resulting in a substantial reduction in the amount of material being land disposed, while also conserving supplies of fossil fuels. Formal recognition by EPA that the use of alternative fuels constitutes recycling would be an excellent first step. The second step would be

formal adoption of a more integrated approach to the permitting of alternative fuels to streamline the implementation and completion of projects currently on hold due to confusion about how to accomplish appropriate environmental permitting required for the use of alternative fuels. In the meantime, each facility interested in the utilization of alternative fuels should consider the permitting options presented above to evaluate potential emissions from new alternative fuels based on the physical characteristics of the fuel rather than what the fuel is called.

References

<http://www.epa.gov/epaoswer/osw/conserv/index.htm>

KEY WORDS

Alternative fuels

Waste derived fuels

Title V

Permit Modifications

Operating Permits