

Incineration

• 31 TAC §§111.121, 111.123, 111.125, 111.127, 111.129

The Texas Air Control Board (TACB) adopts amendments to §§111.121, 111.123, 111.125, 111.127, and new §111.129, with changes to the proposed text as published in the April 24, 1990, issue of the *Texas Register* (15 TexReg 2328). In concurrent action, the TACB repeals the existing §111.129, concerning exemptions.

The amended §111.121 addresses single-, dual-, and multiple-chamber incinerators, and lists control requirements and compliance dates for all such incinerators burning more than 100 pounds per hour (lbs/hr) of domestic, municipal, commercial, or industrial solid waste. The amended §111.123 outlines control requirements and compliance dates for on-site medical waste incinerators, as well as for commercial medical waste incinerators. On-site hospital incinerator controls are based upon the amount of waste burned per hour. The amended §111.125 describes testing requirements. Such testing would be carried out at the request of the TACB, United States Environmental Protection Agency (EPA), or local air pollution control agency. The amended §111.127 outlines monitoring requirements for all incinerators depending on the type and amount of waste being burned. The section also describes recordkeeping requirements for incinerators, and notes that the owners of exempted incinerators which have the capacity to burn more than 100 lbs/hr may be required to maintain operating records at the request of the TACB, EPA, or local air pollution control agency. The new §111.129 specifies operating hour constraints for incinerators which do not have continuous opacity or carbon monoxide monitors, and requires all incinerator owners to post operating procedures on or near the incinerator.

Public hearings were held in Austin and Houston on May 17, 1990. Testimony was received from 170 commenters during the comment period which was closed June 18, 1990. The Administrative Procedure and Texas Register Act, Texas Civil Statutes, Article 6252-13a, §5(c)(1), requires categorization of comments as being for or against a proposal. A commenter who suggested any changes in the proposal is categorized as against the proposal, while a commenter who agreed with the proposal in its entirety is categorized as being for the proposal.

One hundred and seventy commenters, as listed following, testified against the proposed amendments. There were no commenters in favor of the proposal. Because of the lengthy listing, commenters will hereafter be referenced by an index letter ("W" or "O," depending on whether the testimony was written or oral) and number (chronological, based on agency receipt).

Commenters: Childress General Hospital (W-1, W-2), Gonzales County Hospital District (W-3), Coryell Memorial Hospital (W-4), Fisher County Hospital District (W-5), Tyler County Hospital (W-6, W-67), Otto Kaiser Memorial Hospital (W-7), Parkview Hospital (W-8), Atlanta Memorial Hospital (W-9), Guadalupe Valley Hospital (W-10), Sid Peterson Memorial Hospital (W-11, W-17, O-7), Titus County Memorial Hospital (W-12, W-78),

Golden Plains Community Hospital (W-13), All Saints Episcopal Hospitals of Fort Worth (W-14), Henderson Memorial Hospital (W-15, W-26, W-27), Ward Memorial Hospital (W-16), Shannon Medical Center (W-18), a state representative (W-19), Hendrick Medical Center (W-20), a state senator (W-21), a state representative (W-22), Presbyterian Hospital of Wynnboro (W-23), Doctors Hospital (W-24), Polly Ryon Memorial Hospital (W-25), a state senator (W-28), American Society for Hospital Engineering (W-29), Humana Hospital-Medical City Dallas (W-30), McGinnis, Lochridge & Kilgore (W-31), Anson General Hospital (W-32), Bowie Memorial Hospital (W-33), Midland Memorial Hospital (W-34, W-35), Hood General Hospital (W-36), Eastland Memorial Hospital (W-37), Campbell Memorial Hospital (W-38), Danforth Hospital (W-39), Sabine County Hospital District (W-40), Mitchell County Hospital (W-41), Harris Methodist Northwest (W-42), City of Cleburne (W-43, O-10), Parkland Memorial Hospital (W-44), Lamb Healthcare Center (W-45), Scott and White Memorial Hospital (W-46), a state senator (W-47), Kimble Hospital (W-48), Providence Health Center (W-49), Llano Memorial Hospital (W-50), Mother Frances Hospital (W-51, O-3), Memorial Medical Center (W-52, W-90), HCA Women's Hospital of Texas (W-53), HCA South Austin Medical Center (W-54, W-113), Texas Hospital Association (W-55, O-6), Baptist Memorial Hospital System (W-56), Complete Compliance Corporation (W-57), Houston Lighting and Power (O-58), a private citizen (W-59, O-16), a private citizen (W-60), Sierra Club, Lone Star Chapter (W-61, O-21), a United States representative (W-62), East Texas Hospital Foundation (W-63), Sierra Club, Houston Regional Group (W-64) Waste Management of North America (W-65), E. L. Graham Memorial Hospital (W-66), Tyler County Hospital (W-67), Dolly Vinsant Memorial Hospital (W-68), Uvalde Memorial Hospital (W-69, O-2), Northeast Community Hospital (W-70), Driscoll Foundation Children's Hospital (W-71), Gladys Porter Zoo (W-72), Presbyterian Hospital of Dallas (W-73), Fairfield Memorial Hospital (W-74), Private Citizen (W-75), Electra Hospital District (W-76), Lakeland Medical Center (W-77), Titus County Memorial Hospital (W-78), Mission Hospital (W-79), a state representative (W-80), a state senator (W-81), City of Dallas Department of Health and Human Services (W-82), a State Representative (W-83), a state representative (W-84), a state representative (W-85), Heart of Texas Memorial Hospital (W-86), a state senator (W-87), a state senator (W-88), Valley Baptist Medical Center (W-89), Memorial Medical Center (W-90), a state senator (W-91), Val Verde Memorial Hospital (W-92), private citizen (W-93), AMI Brownsville Medical Center (W-94), a United State senator (W-95), Marshall Memorial Hospital (W-96), Northeast Medical Center (W-97), a private citizen (W-98), McAllen Medical Center (W-99), Midway Park Medical Center (W-100), HCA Denton Community Hospital (W-101, W-102), Texas Cemeteries Association (W-103), BrykerWoods Neighborhood Association (W-104, O-5), Texas Department of Health (W-105), a state representative (W-106), a United States Environmental Protection Agency (W-107), Citizens Medical Center (W-108), a private citizen (W-109), a United States representative (W-110), a United States senator (W-111, W-147), Ameritech Equipment Corporation (W-112), HCA South

Austin Medical Center (W-113), a private citizen (W-114), Sierra Medical Center (W-115), a private citizen (W-116, O-18), a private citizen (W-117), a private citizen (W-118), a private citizen (W-119), a private citizen (W-120), Bexar County Hospital District (W-121, O-4), United Neighbors Improving the Environment (W-122), Health Trust, Inc. (W-123, O-20), HCA South Arlington Medical Center (W-124), a private citizen (W-125), Baylor University Medical Center (W-126), a private citizens (W-127), Rosedale Neighborhood Association (W-128), a private citizens (W-129), a private citizen (W-130), a private citizen (W-131), a private citizen (W-132), Memorial Southeast Hospital (W-133), Hill, Seals, and Bartlett (W-134), Coastal Bend Audubon Society (W-135), E. I. duPont de Nemours and Company (W-136, O-15), Miner and Associates (W-137), Harris County Pollution Control Department (W-138), Quantum Chemical Corporation (W-139), a private citizen (W-140, O-19), Texas Chemical Council (W-141), Richardson Medical Center (W-142), a private citizen (W-143), Texaco, Inc. (W-144), National Audubon Society (W-145), a private citizen (W-146), a United States senator (W-147), Lillian M. Hudspeth Memorial Hospital (O-1), Bexar County Hospital District (O-4), Bureau of Licensing and Certification, Texas Department of Health (O-9), Texas Department of Mental Health and Mental Retardation (O-11), a private citizen (O-12), Epic Healthcare Group (O-13), High Plains Baptist Memorial Hospital (O-14), Greater Houston Hospital Council (O-17), a private citizen (O-22), and a private citizen (O-23).

A complete summary of comments and a discussion of issues follows. Copies of the written testimony and hearing transcript are available for inspection at the central office of the TACB, 6330 Highway 290 East, Austin, Texas 78723.

W-8, W-15, W-16, W-26, W-27, W-37, W-50, W-66, W-77, W-96, and O-14 requested an "alternative to the TACB proposal," while all of the 74 hospitals who commented included a request that the TACB reevaluate the proposal.

During the course of the hearing process, the staff reevaluated the proposal. It should be noted that the staff operates under certain legal constraints within the hearing process. Chief among these is the fact that we cannot make any TACB regulations more stringent than proposed without allowing for comments from those who would be impacted by the changes. Once the opportunity for comments is given, the staff may recommend changes to proposed rules, as long as those changes do not make the rules more stringent or impact on an entity which has not had a chance to comment. In other words, we can make a final revision less, but not more, stringent than the proposal.

The purpose of the hearing process is to garner comments and suggestions from the public. The staff must then analyze that testimony and make appropriate changes to the proposed rules. This has been done in the current process, and, as outlined following, the board adopted significant changes from the proposal for hospital incinerators as a result of comments received and staff recommendations.

W-1, W-2, W-3, W-7, W-10, W-12, W-15, W-24, W-26, W-27, W-30, W-34, W-35, W-41,

W-44, W-48, W-55, W-56, W-68, W-78, W-86, W-105, W-115, O-1, and O-23 requested that the TACB exempt small rural hospitals from the proposed requirements, noting that they could not afford to comply with the proposed rules, citing prohibitive costs for using alternative methods, and noting that they are small pollution sources. W-108 asserted that there should be no exemption for any type of incinerator. W-68 noted that hospitals in compliance with previously-established controls should be "grandfathered" because it wasn't the legislature's intent to control them. W-55 and W-56 noted that it is unfair to compare hospital incinerators to municipal or commercial facilities burning much larger amounts of waste and requested that the TACB exempt hospital incinerators located outside of standard metropolitan statistical areas that burn less than 1,000 pounds per day (lbs/day). W-55 also suggested that the agency add a new exemption for existing hospital incinerators to the TACB's Standard Exemption List, and to exempt hospitals which must retrofit or construct an incinerator for the purpose of complying with the new rules from the permitting process. O-17 and O-23 requested that the TACB grant waivers to hospitals in the Houston area who agree to use a local commercial medical waste incinerator upon its completion.

Blanket exemptions, waivers, or "grandfather" clauses, which would allow existing sources to be exempt from proposed controls, would not be in the best interest of public health. Even though most hospitals do not burn large quantities of waste, the type of waste they burn increases the possibility of exposure to toxic contaminants such as dioxins and furans. As products of incomplete combustion, such pollutants can be emitted during the burning of chlorinated plastics. These disposable plastics are being used increasingly by the medical profession because they decrease the possibility of spreading disease. The staff has estimated that approximately 60% of medical waste streams are chlorinated plastics. Although the legislature did not specifically mandate that the TACB control hospital incinerators, it is the agency's responsibility to protect the air resources of the state, and the staff proposed the same requirements for all sources burning the same type of (medical) waste.

However, the amount of potentially harmful emissions is directly related to the amount of waste burned. Many of the hospitals which submitted comments also listed their waste burn rates. Of the 28 who reported this information, 13 had a total burn rate of 100 lbs/day or less. Several of these burned less

than 100 pounds per week. Thus, it was apparent that the burn rate of many small hospitals is so small that requiring only minor controls would adequately protect public health. On the other hand, the staff believed that hospitals burning larger amounts of waste should be required to meet stricter controls to minimize the potential for adverse health effects.

Therefore, the staff recommended a three-tiered system, based on the total amount of waste burned. This was more reasonable than basing the requirements on whether the hospital is urban or rural, as was suggested by several of the commenters. The staff concluded that a remote or rural location was not a sufficient indication that no adverse health impacts could occur. There may be people working or living near a hospital located in a part of the state that is considered rural. Furthermore, there are cases where a rural hospital may be quite large, serving more than one county, and burn large amounts of wastes. Thus, it seemed that establishing control levels based on the amount of waste burned was also more equitable than basing them on population density or rural/urban considerations.

The revisions for incinerators burning medical waste are outlined following:

Amount of Waste Burned:

0 - 100 lbs/hour

Requirements:

- 1400 degrees F minimum, measured constantly while the incinerator is in operation, at the exit of the secondary chamber
- 5% opacity, averaged over any six-minute period
- daylight operation only, except when equipped with certified opacity monitor
- maintenance of temperature, opacity, and operation records
- operating procedures posted on or near incinerator
- compliance date: December 31, 1991

101 - 225 lbs/hour

- 1600 degrees F minimum, measured constantly while the incinerator is in operation, at the exits of the secondary chamber
- one-second retention time
- oxygen content maintained at greater than 4% by volume, measured constantly while the incinerator is in operation
- particulates not to exceed 0.18 grams per dry standard cubic meter (g/dscm) or .08 grains per dry standard cubic foot (gr/dscf), corrected for 7% oxygen, (front-half of the sampling train), monitored at the request of the TACB
- 5% opacity, averaged over any 6-minute period
- daylight operation only, except when equipped with certified opacity monitor
- maintenance of temperature, opacity, and operation records
- operating procedures posted on or near incinerator
- compliance date: July 31, 1992

Amount of Waste Burned:

225 lbs/hour or more

Requirements:

- 1800 degrees F minimum, measured constantly while the incinerator is in operation, at the exit of the secondary chamber
- one-second retention time
- oxygen content maintained at greater than 4% by volume, measured constantly while incinerator is in operation
- particulates not to exceed 0.09 g/dscm or .03 gr/dscf, corrected for 7% oxygen, (front-half of the sampling train only) monitored at the request of the TACB
- 95% HCl removal efficiency for emissions over 4 lbs/hour
- CO not to exceed 100 ppm, corrected for 7% oxygen, monitored continuously
- 5% opacity, averaged over any 6-minute period
- maintenance of temperature, opacity, and operation records
- operating procedures posted on or near incinerator
- compliance date: December 31, 1992

Justification for these requirements is given following.

Temperature. The staff developed three separate temperature limits, based on the amount of waste burned. Temperature monitoring verifies that burn rates are high enough to completely burn waste with a minimum of emissions. A limit of 1400 degrees Fahrenheit will adequately incinerate waste loads of less than 100 lbs/hr without adversely affecting health. With waste loads of this small size, there is less material to burn and the potential for emissions is low. However, temperatures below 1400 degrees Fahrenheit could generate excessive emissions and incomplete combustion. A limit of 1600 degrees Fahrenheit is necessary for incinerators burning 101-225 lbs/hr because a higher temperature will more efficiently volatilize and combust an increased amount of waste materials. Finally, for incinerators burning more than 225 lbs/hr, a review of the literature indicated that 1800 degrees Fahrenheit is the most effective for the destruction of combustibles and minimization of combustion by-products. A review of other state regulations shows that most require 1800 degrees Fahrenheit

temperature, regardless of the amount of waste burned. Nevertheless, the staff believed that many Texas hospitals burn such small amounts of waste that this high temperature was not necessary.

Retention Time. This control is needed to ensure that materials and combustion products are kept in the incineration chamber long enough to burn completely. A retention time was not specified for incinerators burning less than 100 lbs/hr because the less waste burned, the less potential for emissions and need for control. Although some states require a two-second retention time, most require one second. The staff believed that one second is sufficient to provide for adequate combustion and protection of health.

Opacity. The staff limited opacity to 5.0% opacity for all incinerators, regardless of the amount of waste burned. A properly operating incinerator should have no visible emissions; however, it is not feasible to require a 0% opacity. Opacity readers are trained to read in increments of 5.0% because the human eye is incapable of distinguishing finer increments of opacity. The staff's experience is that a 5.0% opacity limit is the

most stringent limit which can be consistently enforced.

Oxygen Monitoring Requirements. Oxygen monitoring verifies that there is enough air available in the incinerator to ensure complete combustion of waste. In incinerators burning less than 100 lbs/hr, there are fewer combustion by-products because of the small amount of waste burned. In such cases, a temperature of 1400 degrees Fahrenheit will ensure adequate combustion and acceptable air quality levels. However, with increases in the amount of waste being burned, the oxygen and temperature balance become more critical. Larger amounts of waste require better mixing and larger volumes of air in order to ensure complete combustion. Therefore, verification of oxygen levels becomes mandatory in the proposed revisions for incinerators burning more than 100 lbs/hr.

Particulate Controls. The staff believed that incinerators burning less than 100 lbs/hr of waste are unlikely to emit particulate levels capable of causing adverse health effects. However, incinerators burning 101-225 lbs/hr of waste emit more small particles capable of being inhaled deeply

into the lungs where they can cause respiratory damage. Therefore, the staff developed a particulate emissions limit of 0.08 gr/dscf for these facilities. Incinerators burning more than 225 lbs/hr present an even greater potential for emitting small particles, and the staff believed that a particulate limit of 0.03 gr/dscf is necessary for such units in order to protect public health. In cases where particulate limits are being imposed, the facilities will be required to self-monitor and verify compliance upon the request of the TACB. The staff's review of available particulate monitors indicated that at this time continuous particulate monitoring should not be required, because the monitors are not consistently accurate and their cost is prohibitive.

Carbon Monoxide (CO) Controls. Measurement of CO levels is a direct verification of the completeness of combustion. In units burning less than 100 lbs/hr, CO levels are not likely to be excessive because of the small amount of waste burned. In intermediate units (101-225 lbs/hr), combustion rates can be controlled most economically by verifying adequate temperature and oxygen levels, which are the primary conditions for complete combustion. However, for facilities burning more than 225 lbs/hr, a small difference in the efficiency of combustion could cause significant ground-level air quality impacts because of the large amount of waste being burned. Therefore, the staff believed that there is a need to directly measure the completeness of combustion in units of this size by establishing CO emission levels and requiring continuous monitoring of CO.

Hydrogen Chloride (HCl) Controls. HCl emissions of less than four lbs/hr disperse quickly under normal atmospheric conditions, and there are no predictable adverse health effects as a result. This cutoff level is consistent with federal National Emission Standards for Hazardous Air Pollutants. HCl emissions higher than four lbs/hr cannot always be adequately dispersed. Therefore, incinerators with such levels must employ control equipment with a 95% removal rate in order to ensure protection of public health. In cases where HCl emission limits are being imposed, which are hospitals burning more than 225 lbs/hr, the facilities will be required to self-monitor and verify compliance upon the request of the TACB. The staff's review of available HCl monitors indicated that at this time continuous monitoring should not be required, because the monitors are not consistently accurate and their cost is prohibitive.

Limitation of Operating Hours. The TACB has often received complaints regarding facilities burning at night. However, since no visual opacity readings can be taken against the night sky, violations of opacity limitations cannot be verified. Therefore, the staff determined that incinerators without an opacity monitor must be limited to operating during daylight hours when opacity can be visually confirmed. This should pose no problem for small incinerators whose waste loads are easily and quickly burned. Operating hours are not limited for incinerators burning more than 225 lbs/hr of medical waste because the higher combustion temperatures proposed for these facilities would ensure clean burning. The continuous monitoring of combustion CO required of these facilities would be an additional safeguard against high opacities.

Recordkeeping and Operating Requirements. Requiring that records of operating conditions and times be maintained will allow enforcement staff to check compliance quickly and accurately. It

will also give facility operators proof of safe operating procedures. In the absence of written records, inspectors would use the rated capacity of the incinerator to determine necessary controls. Posting the operating guidelines on or near the incinerators will ensure proper usage. Therefore, the staff has required these procedures for all incinerators.

Compliance Date. The staff believes that a compliance date of December 31, 1991, will allow units burning less than 100 lbs/hr ample time to add the required temperature monitor, and an opacity monitor if burning is to be conducted beyond daylight hours. Similarly, a deadline of July 31, 1992, gives an adequate amount of time for incinerators burning 101-225 lbs/hr to add those monitors as well as an oxygen monitor. For incinerators burning more than 225 lbs/hr, the staff believes that an extended compliance date of December 31, 1992, is justifiable, because the required CO monitors are more expensive and may not be readily available. These time frames should be adequate to allow the affected facilities to plan, budget, and implement the necessary controls.

W-1, W-2, W-4, W-5, W-6, W-9, W-11, W-12, W-13, W-15, W-17, W-18, W-20, W-25, W-26, W-27, W-32, W-39, W-40, W-53, W-55, W-67, W-71, W-78, W-79, W-89, W-92, W-97, W-99, W-100, W-112, W-126, W-142, and 0-13 suggested the following specific changes: a "less restrictive" method for testing for particulate emissions; allowing rural hospitals to incinerate up to 224 lbs/hr without a scrubber; and exempting hospitals from meeting the 100 ppm carbon monoxide requirement. W-55 also recommended that the particulate level for incinerators burning less than 224 lbs/hr be raised to 0.1 gr/dscf and those burning more than 224 lbs/hr have a particulate standard of .08 gr/dscf. W-55 further recommended increasing the level of allowable CO emissions to 120 parts per million (ppm), and asserted that the proposed CO standard is biased against hospital incinerators because non-medical incinerators have a standard of 120 ppm, and no reason for the disparity has been specified. W-112 noted that the addition of a scrubber/baghouse to meet the proposed .04 gr/dscf particulate standard is not economically feasible for small hospitals. They suggested changing the standard to 0.1 gr/dscf, which they assert would not cause adverse health effects. Several of these commenters also suggested that a temperature of 1800 degrees Fahrenheit plus/ minus 200 degrees Fahrenheit be established, rather than the flat rate of 1800 degrees F.

As noted previously, the staff has deleted requirements for particulate, hydrogen chloride, and carbon monoxide controls for small facilities burning less than 100 lbs/hr. Those facilities burning more than 100 lbs/hr will have particulate limits, depending on their burn rates. The test method will rely only on the front half of the sampling train, which collects dust.

As also noted, the particulate standard has been revised. For hospitals burning less than 100 lbs/hr, there will be no particulate standard. Those burning more than 100 but less than 225 lbs/hr must meet a standard of 0.08 gr/dscf, which is attainable without adding a scrubber. This should allay possible cost problems for small- and medium-sized hospitals.

The staff does not believe it is in the best interest of public health to exempt all hospitals from meeting the proposed 100 ppm CO requirement. Data from other states show that many have set a 100 ppm CO standard, but many are also requiring tighter standards. The staff believes that, for units burning less than 225 lbs/hr, such requirements are unnecessary because of the relatively small amount of waste being burned. However, for facilities burning more than 225 lbs/hr, a small difference in the efficiency of combustion, for which CO is a direct measurement, could cause significant ground-level impacts. Additionally, the characteristics of the waste from these large medical incinerators are such that a 100 ppm standard can be consistently met if the incinerator is being operated correctly. Therefore, the staff believes that there is a need to directly measure the completeness of combustion in units of this size by establishing CO emissions levels of 100 ppm and requiring continuous monitoring of CO.

Regarding the issue of temperature, as noted previously, the staff has established different temperatures based on the amount of waste burned. The staff's review of other state medical incineration regulations shows that the majority require 1800 degrees Fahrenheit, regardless of size. The staff has retained this level for hospitals burning more than 225 lbs/hr. At these waste rates, temperatures below 1800 degrees can lead to incomplete combustion. Temperatures above 1800 degrees Fahrenheit can actually lead to the creation of certain pollutants because higher temperatures can encourage slagging and increase emissions of nitrogen oxides, precursors of ozone and acid rain. Higher temperatures can also create dioxins and furans.

W-54, W-101, W-102, W-112, W-113, W-123, W-124, W-133 suggested that there is no technical basis for differentiating between batch-burn and automatic feed mechanisms when considering hours of operation. They noted that batch-burn incinerators are fully loaded while cold, and the unit is never opened until the burn cycle is completed. Therefore, they requested that batch-burn incinerators be allowed to operate continuously.

Batch-burn incinerators, if operated correctly, are unlikely to exceed opacity limits. As noted in the table, all hospital incinerators burning less than 225 lbs/hr will be allowed to operate continuously if they add a certified opacity monitor to verify compliance. Incinerators burning more than 225 lbs/hr will be required to continuously monitor for CO, which will demonstrate complete combustion. Those incinerators will therefore be allowed to operate continuously. It should also be noted that nonmedical waste incinerators, which will be discussed later, will also be allowed to operate continuously if they add an opacity monitor.

W-29, W-55, O-11, and the majority of the hospitals who commented expressed concern that the financial burden of complying with the proposed rules was excessive, especially for small and/or rural hospitals. The commenters felt that the cost of complying with the proposed rules would decrease their ability to provide adequate care for patients. Many stated that their funds were needed to pur-

chase equipment and employ personnel to improve patient care. Several explained that many small hospitals are operating on an already strained budget as a result of governmental requirements and changes in the Medicare reimbursement process. Complying with the proposed rules could force small hospitals to close and seriously impact the operation of larger hospitals. Several also asserted that the draft proposal had been backed by commercial incinerators in order to force small hospitals to use their facilities. W-9 stated that healthcare costs would rise and physician office charges to patients would increase for those clinics which rely on hospitals to burn their wastes.

Most of these commenters noted that there was little chance that their present incinerator would meet the proposed standards. They also noted that the alternatives to complying

with the proposal, such as contracting with a medical waste disposal company or installing steam sterilization equipment, would be equally expensive. Additionally, they questioned the safety of off-site disposal, noting that on-site incineration minimizes the danger involved in the management of waste. W-55 and W-56 noted that on-site incineration reduces waste volume by as much as 90%, which is important in areas far removed from landfills or where landfills are reaching capacity levels. W-55 noted that probably only 10% of existing hospital incinerators could be retrofitted, and the cost would be between \$75,000-\$750,000. O-11 estimated that the cost of retrofitting could be 10 times as high as original equipment, while W-55 estimated the cost of a new incinerator to be between \$200,000-\$750,000. They also noted that the cost of installing the monitoring devices re-

quired by the proposed rules would be more than \$10,000 for a small unit burning less than 200 lbs/day. W-52 asserted that hospitals are burning the same wastes that, coming from private homes, are simply sent to landfills. Finally, W-46 and W-56 noted that proposed federal legislation establishes less stringent standards for health care incinerators and suggested that the TACB do the same, while W-29 suggested exempting rural hospitals until after federal guidelines are proposed.

As noted previously, the staff reevaluated the proposal and revised controls for hospital incinerators based on the amount of waste burned. The revisions call for less stringent controls and, thus, less costs for hospitals which burn small amounts of waste. After consultation with vendors, the staff estimated the following compliance costs:

Incinerators burning less than 100 lbs/hour:

- temperature monitor (\$800-\$2,100)
- opacity monitor (\$11,000-\$18,000), if operating beyond daylight hours

Total possible cost: \$2,100 (\$20,100 with opacity monitor)

Compliance date: December 31, 1991

Incinerators burning 101-225 lbs/hour:

- temperature monitor (\$800-\$2,100)
- oxygen monitor (\$7,000-\$12,000)
- opacity monitor (\$11,000-\$18,000), if operating beyond daylight hours

Total possible cost: \$14,100 (\$32,100 with opacity monitor)

Compliance date: July 31, 1992

Incinerators burning more than 225 lbs/hour:

- temperature monitor (\$800-\$2,100)
- oxygen monitor (\$7,000-\$12,000)
- carbon monoxide monitor (\$25,000-\$50,000)
- particulate controls (\$250,000 minimum)

Total possible cost: \$314,100

Compliance date: December 31, 1992

Reducing control requirements for smaller incinerators will relieve most rural hospitals from the majority of the economic import of the proposed rules while assuring that public health is adequately protected. The staff believes that these costs are reasonable and equitable and that the proposed compliance dates allow adequate time for necessary controls to be added.

The proposal was not instigated by commercial medical waste incinerator operators, although they did comment. In a previous hearing regarding incinerators held last fall, comments were received from several governmental agencies suggesting that, since hospitals are burning the same types of waste as commercial medical facilities, they should have to meet the same control re-

quirements. This was the rationale for developing the succeeding proposal.

Regarding the issue of proposed federal requirements, staff contacts with national EPA staff indicated that federal controls for medical waste incinerators will not be proposed until 1992 or 1993 and not become final until 1994 or 1995. The staff does not believe that it is in the best interest of public health or air quality to delay implementation of controls for five more years.

W-39, W-42, W-46, W-51, W-55, W-56, W-57, W-68, W-69, W-73, W-79, W-89, W-90, W-123, and O-4 submitted additional comments regarding the proposed revisions for hospital incinerators. W-55 recommended that the proposed daylight only operating requirements be restricted to single-chamber

incinerators and to dualchamber industrial, residential, institutional, or commercial incinerators. They noted that many hospitals are required to operate their incinerators for 15 to 20 hours/day and would have to hire more employees to meet daylight only requirements. W-73, W-79, W-89, and W-90 also noted that limiting the hours of operation would place an undue burden on hospitals. W-79 and W-89 asserted that hospitals must operate their incinerators 16 hours/day to control the accumulation of infectious waste. W-57 maintained that medical incinerators meeting 1800 degrees Fahrenheit onesecond retention should be allowed to burn 24 hours/day.

As noted previously, the TACB has often received complaints regarding facilities burning at night. This practice prevents enforcement

of opacity limitations, because no visual opacity readings can be taken against the night sky. Therefore, all incinerators will be limited to daylight hours of operation, when their opacity can be visually confirmed. This should pose no problems to small incinerators whose waste loads are easily and quickly burned. However, should such facilities desire to burn at night, they have the option of doing so if they add an opacity monitor. These monitors cost \$15,000-\$18,000 and continuously read and record opacity to determine compliance with the 5.0% limit. Operating hours are not limited for incinerators burning more than 225 lbs/hr because the continuous monitoring of combustion CO and, thus, combustion by-products required of these facilities' safeguards against high opacities.

W-56 maintained that the proposed controls are biased against medical waste incinerators because they are unnecessarily restrictive regarding particulate controls, especially since hospitals incinerate only a fraction of the amount of waste incinerated by commercial medical facilities. W-56 also questioned the reliability of the data used as a basis for the proposed rules. The commenter suggested that the TACB did not have enough information on existing incinerators to propose stringent rules and felt the volume of medical waste is a small problem compared to the total volume of waste burned daily statewide. W-45, W-46, and W-63 recommended that the quantity of waste burned be a major factor in establishing alternatives or exceptions to the proposed rules, noting that the rules should be based on incinerator size or capacity. W-55 recommended that the rules differentiate between incinerators burning less than 224 lbs/hr of medical waste and those burning more.

In its revised rules, the staff required the same particulate standard for all noncommercial medical incinerators, including hospital incinerators burning less than 225 lbs/hr. The standard of .03 gr/dscf will apply only to commercial medical incinerators and hospital incinerators burning more than 225 lbs/hr. Because of the nature of their waste streams, facilities of this size and type are more likely to cause adverse health impacts by emitting fine particles capable of being inhaled deeply into the lungs and causing respiratory damage.

There are over 7,000 incinerators operating in Texas; less than 500 of them are operated by hospitals. Therefore, as described previously, the staff has reevaluated the controls for these types of incinerators and lessened their stringency. Other sections of the proposed rules will apply to other types of incinerators, including municipal, domestic, commercial, and industrial incinerators. Controls for these other types of incinerators are less specific than for those burning medical waste because the waste burned at medical incinerators does not vary and, thus, controls can be more specified. Nonetheless, through adoption and implementation of these rules, the agency will have consistent enforcement tools for control of emissions from all types of incinerators operating in the state. Regarding the issue of differentiating control levels based on amount of waste burned, the staff notes that this is what has been accomplished. As noted earlier, this is a more effective and equitable system on which to base controls.

W-39, W-42, W-69, W-54, W-55, and W-100 compared emissions from hospital incinerators to those of other polluting sources, such as cars and grass fires, and noted that proposed controls for hospital incinerators are out of proportion to the likelihood of such incinerators causing problems. They asserted that the agency should expend its energies controlling emissions, such as carbon monoxide from vehicles, and contaminants from other sources, such as power plants, the auto industry, and refineries.

W-51 maintained that the TACB should determine the overall ecological improvement that will result from the proposed rules and assess whether it is worth the economic impact imposed on hospitals.

The TACB has the responsibility for regulating emissions from all pollution sources which have the potential to interfere with the health and welfare of Texas citizens. The agency has a strict new source review program, as well as an extensive statewide enforcement program for stationary sources. Emissions from outdoor burning, such as grass fires, are limited in other sections of Regulation I. Motor vehicles are also regulated. Similarly, hospital incinerators should be regulated in order to provide for protection of air quality. The TACB staff also recognizes economic costs, but believes that few properly operated hospital incinerators will be substantially affected by these proposals.

Regarding the issue of CO emissions, the revised rules will regulate that pollutant in order to maximize the control efficiency of incinerators. Controlling CO minimizes the formation of the by-products of combustion, which include particulates, dioxins, furans, and other products of incomplete combustion, some of which can be toxic at fairly low levels. While many hospital incinerators may be small sources of air pollution, their waste streams have relatively high levels of chlorinated plastics, making them a potential threat to air quality and public health. The staff has examined the projected compliance costs listed earlier in this analysis of testimony, and concluded that they are reasonable in light of the potential environmental benefits.

W-68 noted that hospitals unable to comply with the proposed rules would violate TDH licensing regulations which require all hospitals to have an on-site incinerator. W-68 and W-55 asserted that the proposed compliance date was not long enough; W-123 suggested the date be extended to August 1993, while W-55 suggested it be May 31, 1993.

Although the TDH requires all hospitals to have a functional incinerator on-site, it does not require them to operate the incinerator. Therefore, if a hospital cannot comply with the TACB's rules, it has the option of choosing an alternate method of waste disposal. However, with the revised, less stringent controls, incinerators now in operation will be able to meet the requirements if operated properly. As described previously, the staff has developed separate compliance dates for hospital incinerators based on the level of control required. Units burning less than 100 lbs/hr will have until December 31, 1991, those burning 101-225 lbs/hr will have until July 31, 1992, and those burning more than 225 lbs/hr will have until December 31, 1992 to comply. By limiting control requirements for small hospitals and giving extended compli-

ance dates, the rules should not prove to be onerous. Extending compliance dates past 1992 does not appear to be justified.

O-4 petitioned the TACB to require placement of the CO monitor in the steam exhaust, rather than directly into the incinerator exhaust in order to reduce costs. O-4 also requested that hospitals be allowed to use monitoring data, rather than repeated flue gas analysis. W-123 suggested that the TACB require oxygen and CO testing initially and then sample testing on a five-year basis. W-55 recommended deleting the HCl requirement for hospitals, since a scrubber would be needed to control these emissions.

Section 111.123(3)(D) specifies that medical incinerators burning more than 225 lbs/hr must limit CO emissions to 100 ppm. It also notes that CO and oxygen shall be measured at the same location, although the location is not specified. The operator has the discretion of where to place the monitors, as long as they give a true reading of emissions. It should be noted that, while the location of the oxygen monitor is specified, the rule allows placement at an alternate location approved by the TACB. The staff notes that flue gas analysis or stack sampling will only be necessary when requested by the TACB or other air pollution control agencies. Testing for CO and oxygen verifies completeness of combustion and provides information on the efficiency of the incinerator. Continuous documentation of these important control measures ensures that the incinerator is being operated properly.

Only commercial medical and on-site medical incinerators burning more than 225 lbs/hr will be required to meet an HCl standard.

This standard is necessary because incinerators burning large amounts of waste must have a 95% removal rate in order to ensure protection of public health.

W-59, W-75, W-93, W-98, W-104, W-109, W-114, W-117, W-118, W-119, W-120, W-122, W-125, W-128, W-132, W-128, W-140, W-143, and O-12 opposed any weakening of the proposed revisions. W-64, 93, W-104, W-109, W-117, W-118, W-119, W-122, W-125, W-128, W-132, W-146, W-143, and W-145 asserted that there should be no exemptions for any incinerator. W-134 noted that loosening the proposal for hospital incinerators could cause health and environmental problems for nearby populations.

There are no exemptions for incinerators burning medical waste. Incinerators burning less than 100 lbs/hr of domestic, municipal, industrial, or commercial solid waste will need to meet an opacity of 5.0% and record burn rates at the request of the TACB to verify that the incinerator is not subject to additional requirements applicable for higher burn rates. The staff believes these changes will strengthen, rather than weaken, the rules, because they are capable of being consistently enforced statewide. As always, should nuisance conditions occur, or if the agency receives complaints about incinerators burning less than 100 lbs/hr, the facility will be investigated and appropriate corrective measures taken.

W-138 requested that an opportunity for comment be provided if the TACB proposed new exemptions or withdrew its proposed repeal of exemptions. W-103 concluded that the pro-

posed rules do not extend to the operation of crematories. W-72 asserted that it would cost \$30-\$350,000 to comply with proposed controls, which they noted are more strict than EPA standards.

If, after reviewing the rules applicable to incineration of various wastes, the exemption for non-medical facilities burning less than 100 lbs/hr is of concern to regulatory entities such as Harris County, the TACB invites them to petition for additional rulemaking. The staff did not intend that the rules apply to crematories or zoos, which are not included in TDH definitions related to "special waste from health-care related facilities," nor in the TACB definitions related to other types of wastes or incinerators.

W-59, 61, 64, 93, 98, 104, 118, 122, 116, 127, 129, 130, 131, 145, and 0-22 asserted that all incinerators should have dual chambers or that "discretionary exemptions" for single chambers should be omitted. W-92 stated that single chambers are inappropriate for municipal, institutional, and industrial solid waste and that the TACB should consider grandfathering existing incinerators and requiring dual chambers after a certain cutoff date.

Regarding the issue of banning single-chamber incinerators, the proposed revision specifically enumerates the same requirements for all nonmedical incinerators burning more than 100 lbs/hr, so that single-chamber incinerators must meet the same strict conditions as multiple-chamber incinerators. Consequently, single-chamber incinerators must be as effective as multiple chambers in order to continue operation. Therefore, the staff does not recommend the elimination of single-chamber incinerators. Similarly, the staff does not recommend grandfathering existing single-chamber incinerators, because this would allow for possible conditions of air pollution.

W-136 and W-144 noted that they have single-chamber incinerators permitted by the TWC that would be prohibited from operating under the proposed §111.121 because it prohibits the burning of "other material" in single chambers. W-98 and W-144 also expressed concern that the term "publicly owned" had been replaced by "industrial" in §111.121. W-139 noted that the proposed language against the burning of "other material" would disallow burning industrial waste in single-chamber incinerators. W-31 expressed similar concerns regarding the disallowing of burning vent gas streams in single-chamber incinerators. W-139 asserted that the rule should exempt incinerators burning process-produced vent gases or the definition of industrial solid waste should be rewritten to exclude waste gases, since these gases are covered in TACB Regulation V. W-144 noted that the proposed performance requirements for industrial waste incinerators are more restrictive than those specified by the TWC, and that it will cost \$3-\$5 million to comply with them.

In drafting the language, the staff intended to disallow the burning of medical waste in single-chamber incinerators by prohibiting "single-chamber incineration of any other material," but to allow for the burning of all other types of waste. Therefore, the staff proposes to amend the language to allow for the burning of domestic, municipal, commercial, or

industrial solid waste. By doing so, the only material not allowed to be burned in single-chamber incinerators will be medical waste. Control requirements may differ among governmental agencies. The staff believes that the requirements proposed for industrial incinerators are necessary to adequately protect air quality and public health. This is the agency's mandate under the Texas Clean Air Act.

Regarding W-139's assertions about exempting vent gases, the staff notes that the requirements for industrial incinerators are specific for proper combustion of materials. TACB's Regulation V is designed to control ozone levels by limiting the amount of volatile organic compounds being emitted, while §§111.121-111.129 are designed to limit all air contaminants emitted during many different types of incineration. There is some overlapping between the regulations, but the staff does not believe this overlap to be counter-productive to the control of air pollution and does not propose to exempt specific types of waste. The staff assumes that the compliance costs outlined by W-144 were for retrofitting existing single-chamber to multiple-chamber incinerators. With the clarification that industrial waste may be burned in single-chamber incinerators, these costs should be eliminated.

It should be noted that, upon further evaluation of the proposed language and review by agency staff, it became apparent that the proposed §111.121 was redundant. The main purpose of the section was to require single-chamber incinerators to be equivalent in operation to multiple-chamber incinerators, whose control requirements were listed in §111.123. Rather than list these requirements twice, the staff determined that the proposed §111.121 and §111.123 should be combined into one section (§111.121) encompassing both single- and multiple-chamber incinerators.

W-98, W-116, W-127, W-129, W-130, and W-131 suggested establishing siting or additional permitting requirements for pathological waste incinerators. They asserted that such facilities should not be allowed in populated areas; that prevailing winds should be considered when siting; that no medical waste incinerator should be built within 10 miles of residences or each other; and that the TACB should require permits for all such incinerators, and include in the permit provisions regarding flooding, drainage, transportation, residences, and endangered species. W-98 maintained that the TACB should not permit an incinerator for more capacity than was proposed in the construction plan. The commenter suggested that the TACB require the facility to go through the entire permitting process for expansion projects, because automatically granting expansion permits encourages owners to expand without public knowledge.

The Texas Clean Air Act requires the TACB to protect public health regardless of location. With regard to the suggestion that the agency limit or specify industrial sites through land use (zoning) controls, it is beyond the agency's current jurisdiction to do so. The TACB issues permits for medical waste incinerators other than commercial units. The TDH issues permits for commercial medical waste incinerators; however, the TACB does have au-

thority to review all such permit applications to assess possible air quality impacts. Included in both processes is a review of the potential for adverse health impacts, as well as a determination of the potential for the facility to cause violation of air quality standards. If for any reason, health or air quality is judged to be at risk as a result of the new or expanded facility, the applicant must make changes to the proposed facility which will ensure that such impacts will not occur. Since this is already part of standard permitting procedures, the staff did not add such stipulations to these rules.

The TACB is empowered to limit emissions and possible adverse health and air quality effects. Permits are granted based on projected maximum emissions levels and frequently also specify emissions performance relative to capacity in establishing best available control technology. Accordingly, although capacity is not an issue per se, the maximum capacity chosen by a permit applicant is frequently considered in establishing appropriate control technology requirements and in properly defining the unit being permitted so that modifications requiring a subsequent permit or permit amendment can be identified. Administrative procedures are already in effect, which require a source wishing to modify its facility to submit a permit amendment application. Such permits are reviewed in the same extensive manner as new permits, and public hearings on the proposed modifications are held upon request. These requirements are outlined in other administrative and regulatory guidelines, and the staff did not duplicate them here.

W-59, W-64, W-116, W-118, W-122, W-125, W-127, W-129, W-130, and W-131, maintained that scrubbers should be required to control toxic and acid gas emissions on all incinerators, since they are capable of emitting hazardous pollutants.

Review of the literature indicates that toxic and acid gas emissions are most likely with incineration of medical waste because of the proportionally large amount of plastics in their wastestream. The staff has required that all multiple-chamber incinerators, commercial medical waste incinerators, and hospital incinerators burning more than 225 lbs/hr which emit more than four lbs/hr of HCl, be equipped with a control device with a removal efficiency of 95% for those emissions. Such facilities will probably need to operate wet scrubbers in order to meet this requirement. Since the Texas Clean Air Act states that, with minor exceptions, the TACB may not specify a particular method or type of control equipment, the staff must propose specific standards and emissions levels to be met, rather than the type of equipment to be installed. In many cases, such as this one, there is more than one type of control equipment capable of meeting a prescribed standard. Therefore, the staff did not add a requirement for wet scrubbers to the rule. Other types of incinerators, and those medical waste incinerators burning less than 225 lbs/hr, are less likely to emit levels high enough to be capable of causing adverse health effects. Therefore, the staff did not require additional controls for such facilities. W-59, W-116, W-127, W-129, W-130, W-131, 0-12, and 0-23 contended that all incinerators should be required to have a baghouse capable of removing all particulate emissions. W-

61 advised lowering the proposed particulate level for medical waste incinerators to 0.008 gr/dscf to protect against adverse health effects. W-61 and W-104 asserted that controls for HCl should be tightened to 95% removal for emissions greater than two, rather than the proposed four lbs/hr, or limit HCl to two lbs/hr with no percentage removal rate. W-59 noted that the HCl removal efficiency should be 99%, while O-23 said that 25 ppm of HCl is reasonable and being achieved in other parts of the country.

Regarding the issue of particulate emissions, the removal of all particulate emissions is not possible. The cost of adding a baghouse to an incinerator is \$250,000, which is prohibitive. Furthermore, such additional controls are not necessary to protect health, given the low levels of particulates emitted from small incinerators. Therefore, the staff did not recommend adding such a requirement. The staff's analysis of available data showed that the proposed standard of 0.03 gr/dscf for commercial medical incinerators and hospital incinerators burning more than 225 lbs/hr will be adequate to protect public health. This level will be achieved with the use of a baghouse or wet scrubber because such facilities will also be required to operate wet scrubbers or dry scrubbers with baghouses in order to control HCl and particulate emissions. A review of the literature indicated that the proposed particulate standards will sufficiently protect public health. Furthermore, these levels are capable of being consistently achieved. A level of 0.008 gr/dscf, as proposed by W-61, would be extremely difficult to achieve, even on an intermittent basis. Therefore, the staff did not lower the particulate standard. Based on permit requirements for new sources and the predominant practices of other states, however, the staff does feel that the particulate standard of .08 gr/dscf should be measured from the front half of the sampling train for all affected incinerators.

As noted earlier, HCl emission rates of less than four lbs/hr disperse quickly under normal atmospheric conditions, and there are no predictable adverse health effects as a result. This cutoff level is consistent with federal National Emission Standards for Hazardous Air Pollutants. Conversely, HCl rates higher than four lbs/hr warrant control. The staff believes that a 95% removal rate will ensure protection of public health for larger incinerators.

W-61, W-104, and O-23 recommended changes to the proposed carbon monoxide controls. They suggested that the TACB require 25 ppm concentration for CO. W-98 suggested deleting provisions for CO emissions and replacing them with combustion efficiency for organic controls, which had been previously required. W-98, 116, 127, 129, 130, 131, and O-23 asserted that all incinerators should be required to employ best available control technology (BACT).

Regarding CO emissions, the adopted standard of 100 ppm for commercial medical waste and large hospital incinerators, and 120 ppm for other types of incinerators, is one which can be consistently achieved through appropriate controls. It is also a safe cutoff for the protection of public health and air quality. Therefore, the staff did not lower the CO level to 25 ppm. The CO standards

replaced previous requirements regarding combustion efficiency. The staff believes that it is more accurate and simple to measure CO than combustion efficiency, and CO is also a more enforceable standard.

The TACB requires BACT on all new permitted facilities. This means that new sources must use the most up-to-date technology to control all potential emissions of air contaminants, as long as the controls are technically practicable and economically reasonable. The controls in the adopted revisions will achieve minimum emission levels and protect public health. Adding additional BACT requirements for all incinerators is not justifiable from an economic or health standpoint. Therefore, the staff did not add such requirements.

W-59, W-61, W-64, W-75, W-116, W-118, W-127, W-129, W-130, W-131, W-140, O-22, and O-23 contended that opacity should be limited to 0% for all incinerators, while W-82 maintained that all hazardous waste, commercial medical waste, and new hospital incinerators should have a 0% opacity limit. W-137 asserted that the TACB should give a tolerance of +7.5% opacity, and cited the Code of Federal Regulations for a rationale. W-82 also noted that the TACB should allow a maximum of 10% opacity for six minutes in any 60 consecutive minutes for transient conditions such as start ups. W-98 and W-117 recommended deleting the proposed six-minute averaging time for opacity, while W-59 suggested reducing the proposed six-minute averaging period to five minutes, as in BACT.

A properly-operating incinerator should have no visible emissions. However, it is not feasible to require a 0% opacity: opacity readers are trained to read in increments of 5.0% because the human eye is incapable of distinguishing finer increments of opacity. Therefore, the staff recommended a 5.0% opacity limit as the most stringent limit which can be consistently enforced. Similarly, given that the lower the opacity, the cleaner the burn and thus the fewer possible adverse health effects, the staff did not extend the opacity level to +7.5%. The staff deleted any reference to transient conditions such as start-ups because if, as in correct operating procedures, the secondary chamber is brought up to the required operating temperature before waste is introduced into the first chamber, there should be no start up emissions.

An averaging time for opacity limits is necessary since a single opacity reading will not be representative of overall opacity conditions. Furthermore, it is not possible under current standard operating procedures to consistently maintain a 5.0% opacity level. Therefore, the staff retained an averaging period for opacity. Regarding the length of the averaging period, the six-minute period is consistent with other TACB regulations and also with federal requirements such as New Source Performance Standards. In the interest of consistency in regulatory determinations, the staff did not change the averaging time.

W-59, W-64, W-75, W-93, W-104, W-114, W-117, W-118, W-122, W-143, W-146, and W-145 noted that proper training of operators would ensure safe incineration and suggested the TACB establish a licensing program similar to that designed by the American Society of Mechanical Engineers. W-59, O-22, and O-23 asserted that the TACB

should add specific operating and maintenance requirements to the regulation, while W-98 maintained that approval of operating plans should be part of the permitting process.

There are over 7,000 incinerators in operation in Texas, each with individual operating requirements. While standardized training might be of value, the vast differences in types and sizes of incinerators indicates that the overseeing of proper training must rest with the facility owners. The TACB, however, offers opacity reading training statewide several times per year, and the rule requires that operating guidelines be posted on or near each incinerator. Similarly, the differences in size and types of incinerators statewide precludes the TACB's ability to fairly specify operating and maintenance requirements in the proposed rules. Neither does the agency have the resources necessary to enforce such requirements.

W-107 requested that agency be listed as being able to require testing in §111.125(6). W-107 also stated that they have proposed new test methods for HCl and suggested the TACB use those methods once they are formally promulgated. W-136 noted that the proposed rule might implicitly require stack testing for HCl emissions and recommended that the TACB consider the demonstrated composition of the waste feed and thus limit testing. W-107 requested that the language regarding approval of equivalent test methods be changed to specify that those methods contain minor modifications. W-82 noted that no test method for oxygen content had been specified in §111.125 and suggested the TACB delete the requirement for oxygen testing for residential and commercial incinerators burning less than 250 lbs/day of domestic or municipal solid waste, but require temperature monitoring for all incinerators. W-59, W-98, and W-114 asserted that the TACB should add specific testing intervals, i.e., once per year or tri-monthly for the first two years the incinerator is in operation and impose fines for noncompliance. Similarly, W-128 and W-98 argued that the TACB should establish compliance incentives by shutting down facilities after a certain number of violations.

The staff added language to the rule stipulating that EPA should be allowed to require testing of facilities as necessary. The staff will change the reference test method for HCl when EPA's proposal is formally adopted. Regarding W-136's concern that stack testing might be implicitly required for HCl emissions, the staff notes that such testing would only be required upon the request of the TACB or other air pollution control agencies.

It is necessary to allow for approval of minor variations of test methods and avoid time-consuming federal coordination on issues that will not adversely impact air quality. The TACB has previously agreed that new test methods or major changes approved by the TACB must be submitted to EPA for approval. Therefore, the staff did not feel that it was necessary to amend the proposed language regarding use of alternate test methods.

Regarding the issue of oxygen monitoring, it should be noted that test methods are established for extractive sampling; that is, in cases where the pollutant is removed from the waste stream and read separately. The

staff had not listed a test method for oxygen content because oxygen is monitored directly in the stack. As noted previously, because of their limited emissions and the difficulty of enforcing the requirements statewide, incinerators burning less than 100 lbs/hr of nonmedical waste will be exempt from oxygen testing. For the same reasons, the staff did not recommend a requirement for temperature monitoring for incinerators burning these amounts.

Regarding the issue of testing intervals, as noted earlier, current resources limit the TACB's ability to inspect all facilities yearly. It does not appear useful to enact requirements which the agency will be unable to enforce. The ability to impose fines and penalties for noncompliance with agency regulations is granted under the Texas Clean Air Act and further specified in the TACB's enforcement and procedural rules. Adding separate requirements in each regulation would be confusing and redundant.

W-59, W-98, and W-114 suggested that owners be required to maintain operating records indefinitely and that penalties should be added to the regulation for cases where records are not kept. W-93, 104, 109, 118, 119, 122, 128, and 146 stated that violations should be required to be reported within 24 hours. W-104 and 0-23 noted that facility records should be made available to the public during working hours. W-82 recommended that recordkeeping requirements include the type of waste burned and preheating/loading times. W-82 also asserted that incinerator operators burning less than 250 lbs/day of residential waste should not have to keep written records.

The staff did not require that operating records be kept indefinitely, because two years appears to be an adequate time frame in which to judge proper operation. The TACB general rules (§101.6) outline procedures for facilities to follow in the case of upsets or violations of air quality standards. Therefore, the staff did not duplicate the guidelines by adding them to these rules. The Texas Clean Air Act (Act) gives the TACB and other regulatory entities right of entry onto private property to investigate facility operating conditions. However, the Act does not allow the agency to authorize such activities by the general public. Therefore, the staff did not amend §111.127(b) to allow for public access to plant operating records.

All medical waste incinerators, as well as nonmedical incinerators burning more than 100 lbs/hr, will be required to maintain records of the amount of waste burned daily. The TACB would use the type of incinerator in question and existing definitions to verify the type of waste being burned. Continuous CO monitoring will provide a record of combustion efficiency, and the CO standard will not be able to be met if the secondary chamber is not adequately preheated. The staff did not believe it was necessary to add additional preheating/loading recordkeeping requirements. Finally, as noted previously, the staff has exempted incinerators burning less than 100 lbs/hr of nonmedical waste from all but opacity requirements. At an operating schedule of eight hours/day, this would exempt incinerators burning up to 800 lbs/day from recordkeeping requirements, unless opacity problems are found.

W-98 maintained that operation hours for all incinerators should be limited to 40 hours/week to coincide with regulatory agency work hours, while W-140 noted that there should be no night burning unless a 99.9% control efficiency for HCl, rather than the proposed 95%, was established. W-61 advocated disallowing intermittent operation, instead of requiring continuous feed mechanisms for all incinerators. Finally, W-136 noted that operating guidelines for industrial incinerators are voluminous and difficult to post on or near the incinerator. They asked that the language be amended to allow the posting of such guidelines at a location readily available to operating and maintenance personnel, to be updated when appropriate.

The issues of limiting operating hours and disallowing night burning have merit because, as noted previously, it is not possible to take opacity readings at night. Therefore, the staff recommended that all medical waste incinerators and all other types of incinerators burning more than 100 lbs/hr limit their operations to daylight hours, unless they are equipped with certified opacity or carbon monoxide monitors. Small incinerators burning less than 100 lbs/hr are unlikely to cause adverse health effects or conditions of air pollution. Requiring continuous feed mechanisms for all incinerators is not technically or economically feasible. The adopted controls will adequately protect health and air quality levels and, therefore, the staff did not recommend requiring continuous feed mechanisms for all incinerators. Finally, the staff agreed that in some cases, operating procedures cannot be posted on or near an incinerator, but rather must be stored indoors to be protected from the weather. Therefore, the staff added language to §111.129(2) to allow for posting indoors. The staff also added language specifying that the procedures should be kept up-to-date.

W-59 and W-104 asserted that, if allowed, single chamber incinerators should be given a compliance date of July 31, 1990. W-61 and W-65 stated that all medical waste incinerators should comply by July 31, 1990. W-134 contended that the compliance date for medical incinerators should be one year from the rule effective date in order to be consistent with House Bill 2468, while 0-23 suggested that the compliance date for hospitals be extended by three years. W-136 and W-141 contended that single-chamber industrial incinerators would need three years to comply with the proposed requirements. Finally, W-112 suggested a compliance date of May 31, 1991, for existing incinerators, and October 31, 1991, for new ones, which would need to apply for a construction permit by January 1, 1991.

The staff recommended a December 31, 1991, compliance date for industrial solid waste incinerators because they have been added to this regulation for the first time. It is traditional to give facilities at least six months to comply with new requirements. However, because of the necessity of retrofitting or possibly purchasing new incinerators to comply with these requirements, the staff recommended a one-year compliance date. Similarly, the staff had proposed a May 31, 1991, compliance date for medical waste incinerators, because they were being given tightened restrictions. As described previously, the staff has listed separate compliance dates

for these types of incinerators, based on the level of control required. The staff did not recommend changing these dates in order to comply with House Bill 2468. That bill addressed commercial infectious waste facilities only, and those facilities already have an existing compliance date of July 31, 1990.

As noted previously, the language regarding single-chamber incinerators has been amended to allow for the operation of industrial single-chamber incinerators. This will negate the need for industrial operators to purchase or retrofit into multiple-chamber capacity. Therefore, the staff does not believe an extended three-year compliance date is justified, and did not recommend this change. Finally, adding separate compliance dates for new and existing facilities would be unnecessarily confusing and could possibly contribute to conditions of air pollution by extending compliance deadlines.

W-59, W-64, W-61, W-75, W-143, and 0-22 suggested adding stack height requirements to the rules. W-64, W-75, W-117, W-125, W-143, 0-22, and 0-23 asserted that the rules should contain requirements for safe disposal of ash. 0-12 also suggested that the TACB establish a safe transport system for waste disposal if the waste is carried to landfills.

Regulating stack heights can be useful because higher stacks generally aid in dispersion of emissions. Such regulation is accomplished through the TACB permit review process and Regulation I (§111.151(b)). The staff did not add additional requirements to §111.151(b) or stack height requirements to this section of the regulation. Requiring safe disposal of the ash generated by incinerators, and the safe transport of waste, is outside the jurisdiction of the TACB. The TWC requires manifests for transportation of such waste and regulates hazardous waste landfills, while the TDH regulates municipal solid waste landfills. Therefore, the staff did not add requirements for ash handling to the rules.

W-93, W-104, W-118, and W-122 stated that the TACB should require incinerator operators to conduct waste stream analyses and submit recycling plans. W-93, W-104, W-118, W-122, and W-145 suggested that a timetable for phasing out the use of chlorinated plastics should be submitted by incinerator operators. W-114 and W-145 maintained that there should be no incineration of plastics that may produce dioxins, vinyl chloride, or other carcinogens. W-82 suggested that the TACB specify the moisture, incombustible, and heat content of the wastestream to clarify questions about the type of waste being burned.

Regarding the issue of waste stream analysis, this is accomplished through required stack sampling of all new or modified sources during the permit or permit renewal process. It can also be required of sources when the TACB receives complaints or suspects possible violation of air quality standards. Thus, the staff did not add such requirements for waste stream analysis to the rules. The issue of recycling waste is a timely one, particularly in light of increased saturation of municipal landfills. This issue falls under the jurisdiction of the TDH. Similarly, phasing out the use of chlorinated plastics is outside of the TACB's jurisdiction. The TACB is charged with pro-

fecting the air resources of the state, and is doing so with regard to incinerators by ensuring that emissions will not cause adverse health effects or violations of air quality standards. The agency is not empowered to dictate types of waste being burned, such as plastics, or the end products of waste being burned, such as incombustibles. Rather, the agency establishes the emissions standards which must be met. Therefore, the staff did not add requirements for phasing out specific types of waste or waste by-products to the rules.

W-93, W-104, W-114, W-118, and W-122 contended that the TACB inspect incinerators annually as a safeguard against dioxin and cadmium emissions. W-109 suggested that incinerators be required to monitor for mercury and that no such emissions should be allowed, while O-12 maintained that the rule should require a 99.9% removal of all dioxins and heavy metals, especially mercury, since mercury vaporizes and is hard to capture.

The TACB does not have the resources required to annually inspect the more than 450 hospital incinerators operating in Texas. Such facilities are generally inspected every three years, unless the investigator receives complaints or suspects that a condition of air pollution may exist. In these instances, stack sampling can be and often is required. These administrative procedures are outlined in the TACB's enforcement guidelines. Therefore, the staff did not duplicate these guidelines. Finally, regarding the issue of mercury, the staff's analysis of medical facilities indicates that very little mercury is used; consequently, it is not expected to be present in the wastestream in quantities which might cause adverse health effects. The temperature levels are being set to ensure that dioxin emissions are minimized, while particulate controls will adequately regulate heavy metals.

W-23, W-61, W-104, W-107, and O-23 raised concerns regarding residence time and temperature requirements. O-12 and O-23 noted that combustion gases in medical waste incinerators should be retained for two seconds with turbulence, while W-61 asserted there should be a three-second residence time in the secondary chamber. W-107 suggested that residence time should be 1.0 second instead of one second to reduce round-off errors. O-23 suggested that 1650-1700 degrees Fahrenheit is adequate for the combustion of medical waste, while W-61 noted that temperature should be maintained at an "easily monitored" 1700 degrees Fahrenheit and that exhaust gas temperatures should be kept below 300 degrees Fahrenheit.

W-82 contended that dual-chamber incinerators should have a minimum temperature of 1400 degrees Fahrenheit with a dwell time of 0.25 seconds. W-82 also stated that studies have shown that temperatures above 1800 degrees Fahrenheit can encourage slagging and heavy metal emissions, as well as increase nitrogen oxide emissions and increased fuel costs. W-82 suggested the requirement should be 1750 degrees Fahrenheit +/- 50. W-61 noted that exhaust gas temperatures should be kept below 300 degrees Fahrenheit.

A retention time is not specified for medical incinerators burning less than 100 lbs/hr, because a review of the literature indicates that

a one-second retention time is sufficient to provide for adequate combustion and protection of health. Turbulence allows waste material to be mixed together and burned uniformly. Temperature levels, required to be monitored continuously by all medical waste incinerators, and oxygen levels, required to be monitored for all medical waste incinerators burning more than 100 lbs/hr, are indicators of adequate turbulence and combustion. Furthermore, inadequate turbulence would lead to opacity levels higher than the required 5.0%. The staff believes that, given the requirements noted previously, there is adequate mixing/turbulence in the secondary chamber during firing of the chamber.

In order to avoid possible rounding errors, the residence time should be 1.0 second, and the staff has made that change to the language. As described earlier, there are different temperature requirements, based upon the amount of medical waste burned. Any one temperature is as "easily read" as another, and temperature requirements should be set to ensure appropriate combustion, not appropriate monitoring. The rule language requires minimum temperatures for all medical waste incinerators and prescribes residence time for those burning more than 100 lbs/hr. However, the language does not call for either temperature or residence requirements for other types of incinerators. The staff notes that such requirements would probably be useful to add in order to clarify the operating guidelines. However, additional public hearings would need to be held before such requirements could be added.

The staff is aware that excessively high temperatures can cause dioxin and nitrogen oxide formation. However, high temperatures in the secondary chamber do not have any effect on emissions of metals. Volatilization of material occurs in the primary chamber, which operates at a much lower temperature and is unaffected by higher temperatures in the secondary chamber. Therefore, slagging and ash formation remain constant. Studies have also shown that temperature levels above 1850 degrees Fahrenheit are more likely to cause these problems. The staff believes that the proposed temperature requirement of 1800 degrees Fahrenheit for medical incinerators burning more than 225 lbs/hr can be consistently maintained and notes that it is being required by a majority of states which regulate medical waste incinerators. It is unlikely that facilities will exceed this or any other temperature requirement, since to do so would entail additional fuel costs. Finally, regarding the issue of exhaust gas temperatures, the staff notes that this issue of thermal pollution is beyond the TACB's or any other agency's current jurisdiction. In addition, a reduction in released heat will also reduce dispersion of the pollutants.

W-82 suggested that the TACB consider loosening particulate, CO, and opacity requirements for domestic or municipal solid waste incinerators burning less than 250 lbs/day. W-107 requested clarification of how the HCl limit or cutoff applies, and questioned whether sources would be required to continuously apply control technology once the cutoff is exceeded. W-31 noted that, because incineration of industrial waste may pose more air pollution problems than incineration of municipal waste, a performance-based standard is more appropriate than one which

classifies waste on the basis of source rather than content. W-134 asserted that the HCl removal efficiency should be increased to 99%, noting that this level is technically achievable and required by the federal government for hazardous waste incinerators. W-134 also requested that the TACB provide the procedures it will use to implement the proposed standards, specifically regarding facilities permitted by TDH and TWC, those exempt from TDH permit requirements, and the TACB's Standard Exemption #2.

As previously noted, the staff has exempted nonmedical incinerators burning less than 100 lbs/hr from all except opacity requirements. For medical incinerators burning more than 225 lbs/hr, and all commercial medical waste incinerators, and all other incinerators burning more than 100 lbs/hr, HCl emissions greater than four lbs/hr will require a control device with a removal efficiency of 95%. Operators of incinerators may choose to self-monitor to determine that the required removal efficiency is being met, using the test method specified in §111.125(2). Regarding the issue of performance-based standards, the staff notes that the adopted rules attempt to set general minimum standards for all waste combustion. Used as necessary to supplement other requirements, such as the federal National Emissions Standards for Hazardous Air Pollutants, the staff believes that the limits being implemented will effectively safeguard health in the majority of cases. Therefore, the staff did not add performance-based standards. The staff's review of HCl limits indicated that a 95% control efficiency is sufficient to protect public health. In any case, the staff would be unable to tighten this level to 99% without taking the proposal through the hearing process. The staff plans to monitor HCl performance standards and make any changes as necessary. Formulating the administrative policies that will be used to implement the proposed standards is not part of the rule adoption process and cannot be outlined here. Such policies will be established by the TACB's Compliance and Legal Divisions, and questions should be referred to them.

W-141 asserted that the proposal should be withdrawn to further study the need to include industrial facilities and avoid overlap with TACB Regulation X. W-141 notes that many previously-exempt single-chamber industrial incinerators, which burn liquid wastes would not be allowed to operate under the proposed rules. W-137 requested that the TACB add a formula for correction of CO, similar to the formula listed for particulates. W-57 suggested that, in order to avoid adverse economic impacts, the rules should stipulate that after initial testing, medical waste incinerators burning less than 250 lbs/hr not exceeding 4.0% oxygen and 100 ppm CO should only have to sample every five years or any time there is any operational or procedural change. W-43 asserted that they cannot comply with the daylight only requirement and suggested rewording, "except in the case of incinerators designed for continuous operation" because their incinerators have to be run continuously in order to work correctly. W-112 requested that batch-burn incinerators be included with automatic feed incinerators so that they can be run at night.

As discussed previously, the staff has amended the rule language to specify that

single chamber incineration of industrial solid waste is permitted. Regarding possible overlap with Regulation X, the staff notes that this regulation is an interagency agreement with the TWC regarding the permitting by TWC of hazardous waste or solid waste management facilities. The rules under discussion will be used by the TACB to supplement Regulation X and any other rule currently governing specific types of solid waste incinerators by setting minimum standards for all such facilities. Therefore, the staff believes the rules as proposed are useful and should not be withdrawn. The CO standard contains a reference to the formula listed in §111.121(1) for correction for oxygen. Therefore, the staff did not add another reference. Because facility operating conditions can change quickly, setting a sampling schedule of every five years is not protective of air quality. Incinerators burning more than 100 lbs/hr of medical waste need to monitor oxygen content continuously in order to verify the completeness of the burn.

However, as discussed previously, the rules stipulate that medical incinerators burning less than 225 lbs/hr will not have to meet CO restrictions. Regarding the issue of batch-burn and continuous-feed incinerators, as noted previously, the staff has deleted such references and instead gave all incinerators an option of limiting hours or adding an opacity or carbon monoxide monitor if they wish to operate at night.

W-65 suggested §111.125 contain an initial requirement for stack testing within 120 days of initial start-up, and retesting every two years. W-137 noted that CO emission recordings typically show "spikes" and requested that the proposed CO standard include wording to allow the levels to be averaged over an eight-hour period. W-136 asserted that the proposed rules should exclude incinerators and other combustion units which are regulated either under the Resource Conservation and Recovery Act (RCRA) or by the TACB as part of an industrial process. They noted that permits specific to each incinerator are granted by the TWC and subject to TACB Regulation VI, and that the TACB has not demonstrated that the proposed rule will improve protection of public health and environment. They contended that regulations for industrial incinerators should continue to be incorporated into TACB Regulation X, which pertains to hazardous waste or solid waste management facilities, rather than in the proposed rules.

While requiring stack testing might be desirable in some cases, it is unnecessary for all incinerators. Such sampling will be required by TACB or local air pollution control agency investigators on a case-by-case basis, possibly more frequently than every two years, if necessary. Therefore, the staff did not add stack sampling requirements to the rules. Allowing for an eight-hour CO averaging period would allow for too large a variation in emissions and combustion by-products and,

thus, would not be protective of air quality or public health. Although the language in §111.123(b) does not contain a CO averaging period, the staff notes that if the monitor calculates emissions on a 60-minute rolling average, this will be accepted for quantification of CO level~s.

Regarding W-136's assertion that the proposed rules should exempt certain types of industrial incinerators, the staff points out that TACB Regulation VI deals with the control of new or amended sources through the permit review process, while Regulation I sets minimum standards for all existing incinerators. An industrial/hazardous waste incinerator, therefore, would be controlled by Regulation I even if it already had a TACB or TWC/RCRA permit. The staff did not intend to preclude industrial incinerators from the proposed rules; rather, the staff intended to include any type of incinerator regardless of its location and type of waste burned. W-136's recommendation would exempt incinerators which the staff believes need to be regulated to protect against adverse health and air quality effects. It is the opinion of the staff that instituting the controls described in the adopted rules will result in improved air quality because those controls will be enforced statewide, not merely for permitted facilities. Therefore, the staff did not exempt facilities based on the fact that they may already be permitted.

W-136 contended that a 3.0% minimum oxygen limit would be adequate to assure complete combustion/destruction of industrial waste, noting that the proposed 4.0% limit might not be achievable or necessary. W-136 further noted that a single CO emission standard should not be applied to all hazardous waste incinerators, and that an alternate standard of total hydrocarbons would be a more accurate indicator of products of incomplete combustion (PICs) emissions. This commenter also asserted that specific monitoring controls should be determined on a case-by-case basis because of the differences in types of incinerators. As an example, they noted that one of their incinerators was designed not to operate if there is not excess oxygen present in the chamber, and as a result, its TACB permit does not require oxygen monitoring. Finally, W-136 maintained that the TACB should allow for individual facility testing to demonstrate the required operating conditions meet performance standards. They commented that permittees should be allowed by rule to conduct tests of wastes and exhaust emissions and should have operating requirements based on demonstration that the units meet applicable performance standards.

The federal Resource Recovery and Conservation Act requires an oxygen content of 3.0-5.0%. Although W-136 may have good mixing of air and waste by-products so that there is a uniform combustible mixture, the staff cannot assume that all industrial inciner-

ators have an equally uniform mixture and, therefore, maintained the oxygen content at 4.0%. Emissions of PICs are of primary concern in industrial or hazardous waste incinerators, and EPA has established regulations that allow for substitution of total hydrocarbon (THC) standards for CO standards for these types of incinerators. Therefore, the staff added language in §111.121(3) that allows facilities not burning medical waste to choose to meet a THC standard of 20 ppm, upon the approval of the executive director, rather than the 120 ppm CO standard. Oxygen correction and measurement requirements will be the same for both standards.

Regarding W-136's assertion that monitoring requirements should be established on a case-by-case basis, the staff points out that TACB regulations are applicable statewide for all specified sources. Generally, oxygen monitoring is needed to determine adequate combustion. If a facility is designed differently than others of its type, such differences can be resolved during the permitting process. However, in order to achieve consistency with the majority of sources, the staff retained the oxygen monitoring requirement to verify the 7.0% correction factor for both the CO and the THC standards. The staff believes that the monitoring and testing requirements outlined are a fair and equitable way to determine compliance. Such requirements are also easier to enforce consistently than the individual selftesting advocated by the commenter, because such testing would require regulatory staff be on hand to oversee the tests. Design and implementation of the testing could take months, whereas monitoring yields instant verification of emissions. Therefore, the staff did not add allowances for individual testing to the rule language.

The amendments are adopted under the Texas Clean Air Act (TCAA), §382.017, which provides the TACB with the authority to adopt rules and regulations consistent with the policy and purposes of the TCAA.

§111.121. Single-, Dual-, and Multiple-Chamber Incinerator. No person shall cause, suffer, allow, or permit the burning of domestic, municipal, commercial, or industrial solid waste as defined in §101.1 of this title (relating to Definitions) in a single-, dual-, or multiple-chamber incinerator unless the conditions listed as follows are met. For the purpose of this section, the term "commercial waste" shall be defined as waste material generated from retail and wholesale establishments.

(1) Particulate emissions shall not exceed 0.18 gram per dry standard cubic meter (g/dscm) or 0.08 grain per dry standard cubic foot (gr/dscf), front-half of sampling train only, when corrected for 7.0% oxygen in the stack gas according to the formula:

$$P_c = P_m \times \frac{14}{21 - Y}$$

21-Y

Where:

P_c is the corrected concentration of particulate matter,

P_m is the measured particulate matter concentration, and

Y is the measured concentration of oxygen in the stack gas using the Orsat method for oxygen analysis of dry flue gas as defined in 40 CFR Part 60, Appendix A (Method 3).

(2) Hydrogen chloride (HCl) emissions greater than 1.8 kilograms (four pounds) per hour require a control device with a minimum removal efficiency of 95%.

(3) Carbon monoxide (CO) emissions shall not exceed 120 parts per million by volume dry basis, when corrected to 7.0% oxygen (O₂) in the stack gas as specified in paragraph (1) of this section. CO and O₂ shall be measured at the same location. Upon the approval of the executive director of the Texas Air Control Board (TACB), a total hydrocarbon (THC) standard may be chosen as an alternative to the CO standard. In such cases, the emissions shall not exceed 20 parts per million, when corrected to 7.0% oxygen in the stack gas as specified in paragraph (1) of this section. THC and O₂ shall be measured at the same location.

(4) Oxygen content shall be maintained at greater than 4.0% by volume of the emissions of the incinerator, measured at the exit of the incinerator, or at an alternate location approved by the executive director or a designated representative of the TACB.

(5) Visible emissions shall not exceed an opacity of 5.0% averaged over any six-minute period.

(6) Compliance with the requirements of this section shall be as soon

as practicable, but no later than July 31, 1990, except in the case of industrial solid waste incinerators, which shall be in compliance as soon as practicable, but no later than December 31, 1991.

(7) Incinerators burning not more than 100 pounds per hour of domestic, municipal, commercial, or industrial solid waste, based on the total weight of materials burned, shall be subject to an opacity limit of 5.0% averaged over a six-minute period and the requirements of §111.127(c) of this title (relating to Monitoring and Recordkeeping Requirements), but shall be otherwise exempt from the provisions of §§111.121, 111.123, 111.125, 111.127, and 111.129 of this title (relating to Incineration).

§111.123. Medical Waste Incinerators. No person shall cause, suffer, allow, or permit the burning of medical waste, as defined in §101.1 of this title (relating to Definitions), unless the incinerator meets the following requirements.

(1) On-site medical waste incinerators burning not more than 100 pounds per hour of waste must:

(A) be equipped with a secondary chamber which maintains a temperature of 1400 degrees Fahrenheit or higher, measured at the exit of the secondary chamber and recorded continuously;

(B) not exceed visible emissions of 5.0% opacity averaged over any six-minute period;

(C) maintain written records as specified in §111.127(b) of this title (relating to Monitoring and Recordkeeping Requirements);

(D) limit hours of operation as specified in §111.129(1) of this title (relating to Operating Requirements);

(E) post current manufacturer's operating procedures as specified in §111.129(2); and

(F) comply with the requirements of this section as soon as practicable but no later than December 31, 1991.

(2) On-site medical waste incinerators burning more than 100 but no more than 225 pounds per hour of waste must:

(A) be equipped with a secondary chamber which retains all combustion gases for 1.0 second or longer at a temperature of 1600 degrees Fahrenheit or higher, measured at the exit of the secondary chamber and recorded continuously;

(B) limit particulate emissions to 0.18 gram per dry standard cubic meter (g/dscm) or 0.08 grain per dry standard cubic foot (gr/dscf), front-half of sampling train only, when corrected for 7.0% oxygen in the stack according to the formula specified in §111.121(1) of this title (relating to Single-, Dual-, and Multiple-Chamber Incinerators);

(C) maintain an oxygen content at greater than 4.0% by volume of the emissions of the secondary chamber, measured at the exit of the secondary chamber or at an alternate location approved by the executive director or a designated representative of the TACB;

(D) not exceed visible emissions of 5.0% opacity averaged over any six-minute period;

(E) maintain written records as specified in §111.127(b);

(F) limit hours of operation as specified in §111.129(1);

(G) post current manufacturer's operating procedures as specified in §111.129(2); and

(H) comply with the requirements of this section as soon as practicable but no later than July 31, 1992.

(3) On-site medical waste incinerators burning more than 225 pounds per hour of waste, and commercial medical waste incinerators, as defined in §101.1 of this title (relating to Definitions), must:

(A) be equipped with a secondary chamber which retains all combustion gases for 1.0 second or longer at a temperature of 1800 degrees Fahrenheit or higher, measured at the exit of the secondary chamber and recorded continuously;

(B) limit particulate emissions to 0.07 g/dscm or 0.03 gr/dscf, front-half of the sampling train only, when corrected for 7.0% oxygen in the stack gas as specified in §111.121(1);

(C) for hydrogen chloride emissions greater than 1.8 kilograms (four pounds) per hour, a control device with a minimum removal efficiency of 95% is required;

(D) limit carbon monoxide emissions to 100 parts per million by volume dry basis, when corrected to 7.0% oxygen in the stack gas as specified in §111.121(1). CO and O₂ shall be measured at the same location;

(E) maintain an oxygen content at greater than 4.0% by volume of the emissions of the secondary chamber, measured at the exit of the secondary chamber or at an alternate location approved by the executive director or a designated representative of the TACB;

(F) not exceed visible emissions of 5.0% opacity averaged over any six-minute period;

(G) maintain written records as specified in §111.127(b);

(H) post current manufacturer's operating procedures as specified in §111.129(2); and

(I) comply with the requirements of this section as soon as practicable, but no later than July 31, 1990, for commercial medical waste incinerators, and December 31, 1992, for on-site medical waste incinerators.

§111.125. Testing Requirement. Upon the request of the executive director or a designated representative of the TACB, or a representative of the United States Environmental Protection Agency, or the local air pollution control agency, compliance with §111.121 of this title (relating to Single-, Dual-, or Multiple-Chamber Incinerators) and §111.123 of this title (relating to Medical Waste Incinerators) shall be demonstrated by applying the following test methods, as appropriate:

(1)-(2) (No change).

(3) Carbon monoxide. Test Method 10, 10A, or 10B (40 Code of Federal Regulations 60, Appendix A) or, for nonmedical waste incinerators, total hydrocarbons: Test Method 25A (40 Code of Federal Regulations Part 50, Appendix A);

(4) Opacity. Test Method 9 (40 Code of Federal Regulations Part 60, Appendix A) or;

(5) (No change).

§111.127. Monitoring and Recordkeeping Requirements.

(a) Incinerators burning not more than 100 pounds per hour of medical waste as specified in §111.123 of this title (relating to Medical Waste Incinerators) shall install, calibrate, maintain, and operate a monitoring device that continuously measures and records the temperature of the exhaust gas of the incinerator. All incinerators burning more than 100 pounds per hour of waste as specified in §111.121 of this title (relating to Single-, Dual-, or Multiple-Chamber Incinerators) and §111.123 shall install, calibrate, maintain, and operate a

monitoring device that continuously measures and records the oxygen content and temperature of the exhaust gas of the incinerator. The monitoring device for incinerators equipped with a wet scrubbing device shall continuously measure and record the pressure drop of the gas flow through the wet scrubbing device. Commercial medical waste incinerators and incinerators burning more than 225 pounds per hour of domestic, municipal, commercial, medical, or industrial solid waste shall be equipped with continuous emissions monitors which measure and record in-stack carbon monoxide in addition to the other requirements of this section. For nonmedical incinerators, a total hydrocarbon monitor may be substituted for the carbon monoxide monitor if a total hydrocarbon standard is established pursuant to §111.121(3). The oxygen, total hydrocarbon, and carbon monoxide monitoring devices described in this section must be certified for use following procedures outlined in 40 Code of Federal Regulations 60, Appendix B, Performance Specifications 3 and 4, respectively. Such certification must be approved by the executive director or a designated representative of the TACB. Compliance determinations may be made based on results of monitoring with a certified monitor.

(b) The owner or operator of an incinerator subject to the requirements of §§111.121, 111.123, and 111.125 of this title (relating to Testing Requirements) shall maintain written records of all monitoring and testing results, hours of operation, and quantity of waste burned. Such records shall be retained for a period of not less than two years before being destroyed. Such records shall be made available upon request by authorized representatives of the TACB, United States Environmental Protection Agency (EPA), or local air pollution control agencies. Alternately, in the absence of records verifying waste quantities burned, the design capacity of the unit will be used to determine applicable controls.

(c) Upon the request of the executive director or a designated representative of the TACB, the EPA, or local air pollution control agency, the owner or operator of an incinerator which is exempt from the requirements specified in §111.121 and whose incinerator has the capacity to burn more than 100 pounds per hour shall maintain written records of the amount of waste burned. Such records shall be retained for a period of not less than two years before being destroyed.

§111.129. Operating Requirements. The owner or operator of incinerators subject to the requirements of §§111.121, 111.123, 111.125 and 111.127 of this title (relating to Single-, Dual-, or Multiple-Chamber Incinerators; Medical Waste Incinerators; Testing Requirements; and Monitoring and Recordkeeping Requirements) shall meet the following operating requirements.

(1) Except in the case of incinerators with continuous opacity or carbon monoxide monitors, or equivalent monitors approved by the executive director or a designated representative of the TACB, the incinerator shall be limited in hours of operation from one hour after sunrise to one hour before sunset; and

(2) Current manufacturer's operating procedures shall be posted on or near each incinerator or the incinerator control room, and the incinerator shall be operated in accordance with those procedures.

This agency hereby certifies that the rule as adopted has been reviewed by legal counsel and found to be a valid exercise of the agency's legal authority.

Issued in Austin, Texas, on October 24, 1990

TRD-9011237

Lane Hartsock
Director, Planning and
Development Program
Texas Air Control Board

Effective date: November 14, 1990

Proposal publication date: April 24, 1990

For further information, please call: (512) 451-5711, ext. 433

• 31 TAC §111.129

The Texas Air Control Board (TACB) adopts repeal of §111.29, without changes to the proposed text as published in the April 24, 1990, issue of the *Texas Register* (15 TexReg 2331). The purpose of the repeal is to remove an exemption which previously existed for incinerators burning less than five tons per day.

Public hearings were held in Austin and Houston on May 17, 1990. The hearing record was held open for the receipt of testimony until June 18. The Administrative Procedure and Texas Register Act, Texas Civil Statutes, Article 6252-13a §5(c)(1), requires categorization of comments as being for or against a proposal. A commenter who suggested any changes in the proposal is categorized as being for the proposal, while a commenter who agreed with the proposal in its entirety is categorized as being for the proposal.

No comments were received regarding adoption of the repeal.

Copies of the hearing transcript are available for inspection at the central office of the TACB, 6330 Highway 290 East, Austin, Texas, 78723.

The repeal is adopted under the Texas Clean Air Act (TCAA), §382.017, which provides the TACB with the authority to adopt rules and regulations consistent with the policy and purposes of the TCAA.

This agency hereby certifies that the rule as adopted has been reviewed by legal counsel and found to be a valid exercise of the agency's legal authority.

Issued in Austin, Texas, on October 24, 1990.

TRD-9011235

Lane Hartsock
Director, Planning and
Development Program
Texas Air Control Board

Effective date: October 14, 1990

Proposal publication date: April 24, 1990

For further information, please call: (512) 451-5711, ext. 433

TITLE 37. PUBLIC SAFETY AND CORRECTIONS

Part I. Texas Department of Public Safety

Chapter 3. Traffic Law Enforcement

Accident Investigation

• 37 TAC §3.4

The Texas Department of Public Safety adopts an amendment to §3.4, without changes to the proposed text as published in the September 18, 1990, issue of the *Texas Register* (15 TexReg 5408).

Adoption of this amendment will ensure the public that no misinterpretation occurs in filing traffic offenses in locations other than a public highway.

Subsection (d)(3) is deleted as it is no longer applicable. The department finds no Court of Criminal Appeals rulings that extend traffic offenses to locations other than a public highway other than those covered by specific statute.

No comments were received regarding adoption of the amendment.

The amendment is adopted under Texas Civil Statutes, Article 6701d, §21, §43, and Article 4413(b)(2) which provide the Texas Department of Public Safety with the authority to investigate accidents and file any justifiable charges without regard to whether an accident occurred on a public highway, public property, or private property open to the public.

This agency hereby certifies that the rule as adopted has been reviewed by legal counsel and found to be a valid exercise of the agency's legal authority.

Issued in Austin, Texas, on October 22, 1990

TRD-9011361

Joe E. Milner
Director
Texas Department of
Public Safety

Effective date: November 16, 1990

Proposal publication date: September 18, 1990

For further information, please call: (512) 465-2000

TITLE 40. SOCIAL SERVICES AND ASSISTANCE

Part I. Texas Department of Human Services

Chapter 15. Medicaid Eligibility

Subchapter D. Resources

• 40 TAC §15.442, §15.443

The Texas Department of Human Services adopts amendments to §15.442-§15.443, concerning property used in trade or business. The amendments are a result of a federal mandate that provides for the exclusion as a resource any property used in a client's trade or business. The mandate also excludes personal property used in a client's employment.

The amendments are justified to comply with federal requirements.

The amendments will function by excluding as a resource any property, regardless of value, used in employment. The amendments also will function by excluding a client's personal property that is used in employment.

The amendments are adopted under the Human Resources Code, Title 2, Chapters 22 and 32, which authorizes the department to administer public and medical assistance programs. To comply with federal requirements, these amendments are adopted to be effective May 1, 1990.

§15.442. *Personal Property.*

(a)-(g) (No change.)

(h) Livestock. Livestock that is maintained as part of a trade or business or exclusively for home consumption is not counted; otherwise, the livestock's current market value is a countable resource.

§15.443. *Resources Essential to Self-support (Real and Personal Properties).*

(a) Property essential to self-support. The department may exclude as a resource property essential to self-support but count the income that the property produces. To be considered as a excludable resource, business property (including personal, business-related property) must be in current use in the client's trade, business, or employment. If the property is not in current use, the department excludes the property only if it has been used by the client in the past, and if it is reasonable to expect that it will be used again.

(1) Business property essential to self-support. Effective May 1, 1990, property essential to self-support that is used in a client's trade or business is excluded from resources regardless of the value or rate of return. Excludable business property is tangible business assets including but not limited to land and buildings, equipment and supplies, inventory, live