STATE OF NEW JERSEY

DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

LABOR STANDARDS & SAFETY ENFORCEMENT

DIVISION OF PUBLIC SAFETY

AND OCCUPATIONAL SAFETY & HEALTH

INFORMATION GUIDE

FOR THE INSPECTION OF BOILERS, PRESSURE VESSELS

AND REFRIGERATION SYSTEMS

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WHO IS THE BUREAU OF BOILER AND PRESSURE VESSEL COMPLIANCE?

The Mechanical Inspection Bureau of Boiler and Pressure Vessel Compliance (BB&PVC) is an agency found within the New Jersey Department of Labor and Workforce Development in the Division of Public Safety and Occupational Safety & Health. This Bureau originated in 1913 to promote greater safety to life and property through the uniformity of construction, installation, repair, maintenance, and inspection of boilers and pressure vessels.

WHAT EQUIPMENT DOES THE BB&PVC INSPECT?

In accordance with the provisions established by the boiler, pressure vessel, and refrigeration law (BPV&RL), New Jersey Statutes Annotated (N.J.S.A.) 34:7-14, inspections shall be made of the equipment falling under the jurisdiction of the BB&PVC. Vessels subject to test and inspection are boilers, pressure vessels and refrigeration systems that meet the inspection criterion established by the BPV&RL. This statute specifies that all steam or hot water boilers or similar pressure equipment potentially capable of generating steam must be inspected, and those that have adequate relief devices set to discharge at:

1. A pressure of 15 or less pounds per square inch gage (psig); or

2. A hot water boiler having an adequate relief device set to discharge at a pressure of 160 psig or less, and which is reliably limited to temperatures of 250°F or less.

    a. When such steam or hot water boilers serve dwellings of less than six-family units or other dwellings with accommodations for less than 25 persons. <u>The threshold capacity for boilers is 10 kilowatts (kW) or 40, 000 British thermal unit per hour (Btu/hr) and only when the boiler serves (supplies) six-family units or more or any other type dwelling with accommodations for more than 25 persons.</u>

3. All other pressure vessels may be inspected and be subject to test after installation and periodically at such intervals as the Commissioner may by rule establish (see N.J.S.A. 34:7-26; N.J.A.C. 12:90-3.11 and N.J.A.C. 12:90-5.2). Also see the "Advisory Regarding New Rule and Regulation on Pressure Vessel Inspections" and the "General Pressure Vessel Inspection" document.

4. A refrigeration system is inspected when any of the following conditions are found:

    a. Systems using refrigerants of a flammable nature as classified by ASHRAE 34 as an A2, B2, A3, or B3 or toxic according to ASHRAE 34 as B1, B2, or B3 that is rated over three tons for refrigerating capacity;
    b. Systems using refrigerants that are flammable or toxic as determined by ASHRAE 34 above requiring over 6 driving horsepower or more;
    c. Systems using refrigerants of a nonflammable nature as classified by ASHRAE 34 as A1, A2, or A3 and nontoxic as classified by ASHRAE 34 as A1 or B1 over 18 tons refrigerating capacity or more;
    d. Systems using refrigerants of a nonflammable and nontoxic nature as classified by ASHRAE 34 above requiring over 36 driving horsepower or more;
    e. Systems using refrigerants of a nonflammable and nontoxic nature as classified by ASHRAE 34 above operating over 15 psig or more, regardless of capacity.

Equipment not inspected is any boiler or pressure vessel under the jurisdiction of and control of the United States Government or used solely for the propulsion of motor vehicles regulated by Title 39 of the Revised Federal Statutes.

WHAT IS USED TO SIGNIFY THAT THE EQUIPMENT IS FIT FOR OPERATION & COMPLIES WITH STATE LAW?

When an equipment owner receives a satisfactory inspection, the BB&PVC registration process requires a jurisdiction number assignment to identify the equipment in the State. To validate the inspection, the BB&PVC issues a Certificate of Inspection (Certificate) to the owner of the equipment. The jurisdiction number assigned to the equipment is located in the upper left-most corner of the Certificate. It is the responsibility of the equipment owner to affix the jurisdiction number to the equipment in a secure and permanent manner.

The Certificate must be framed and posted where equipment is located or in a facility or plant office and must be visible and prominently displayed, and available upon the request of the BB&PVC or any other state or local agency. When a Certificate is missing, other state and local code inspectors may have the owner contact the BB&PVC to ascertain the condition of the equipment for public safety.

Failure by the owner to display the Certificate could cause a penalty assessment to be issued by the BB&PVC at a minimum fine of $500 and a maximum of $5,000 for each day in violation. The fee for a replacement Certificate is $16.00 for a boiler and $15.00 for a pressure vessel or refrigeration system. The number to call to request an inspection or to report a lost certificate is (609) 777-4636.

WHO PERFORMS THE INSPECTIONS?

The BPV&RL allows inspections by insurance companies who conduct business in New Jersey and who employ inspectors that are certified and specifically trained in boiler and pressure vessel safety. Insurance company inspectors by law must report their inspection activity to the BB&PVC. They perform approximately 80% of the inspections in the State.

The statutes require that inspection of boiler, pressure vessel and refrigeration equipment occur at regular intervals. Select boiler equipment must receive internal inspections annually with some only needing an external inspection. Refrigeration plants receive inspections annually as well. Pressure vessels are inspected at the intervals recommended by the Codes and Standards adopted by reference wherein minimum inspection interval for pressure vessels may be three to five years depending upon the vessel use, age and mechanical integrity. The initial safety inspection usually determines the interval. All equipment may be subject to additional inspections at the discretion of the inspector, when the condition of the vessel warrants additional inspections.

WHAT ARE THE QUALIFICATIONS OF THE INSPECTORS?

Under the authority of the Commissioner of Labor and Workforce Development, the Mechanical Inspection Bureau Examining Board must administer an examination to all inspectors in accordance with the provision of N.J.S.A. 34:1-44, 1-45.

Inspectors must be familiar with the statutes, the regulations and have worked either in the field of boiler or pressure vessel construction, fabrication, quality assurance, boiler and power plant operation, maintenance or repair.

WHAT CODES AND STANDARDS ARE USED IN NEW JERSEY AND WHAT TYPE OF SERVICE IS PROVIDED BY THE AGENCY?

It is generally understood that a boiler or pressure vessel has the potential to explode, cause loss of life and tremendous damage to structures and equipment. Thus, the BB&PVC has in the New Jersey Administrative Code (N.J.A.C.) 12:90 adopted by reference the following consensus Codes and Standards – The American Society of Mechanical Engineers (ASME) Construction Codes for boilers and pressure vessels and the American Petroleum Industry (API) Standard for pressure vessels installed and operated in the refinery and petrochemical industry. By adopting these safety codes and standards, the BB&PVC ensures the best protection is provided to the public for new pressure retaining equipment. After construction, safety is assured for the useful life of the vessel by enforcing the National Board Inspection Code (NBIC) and the pertinent ASME and API Fitness for service, operation, inspection, and maintenance codes.

The BB&PVC maintains an Accreditation as an ASME Authorized Inspection Agency for Section I, IV, and VIII Div. 1, 2, and 3 of the ASME Boiler and Pressure Vessel Code. Maintaining this accreditation allows the BB&PVC to perform shop inspection (third party) services to those New Jersey manufacturers that request such service. Maintaining such a service is a mandate of the BPV&RL at N.J.S.A. 34:7-15.

The following is a listing of industries that have equipment regulated by the BPV&RL:

- Private and Public Schools
- Nuclear and Fossil Fuel Power Plants
- IPP (Independent Power Producers) or Co-Generation plants
- Boiler and Pressure Vessel Manufacturers for New Construction and Repair Firms
- Small to Large Industry (Pharmaceutical, Manufacturers, Mills, Warehouses, Food Processing Plants, etc.)
- Oil Refineries
- Chemical Plants
- Hospitals, Medical Centers, Universities
- Heating and Process Plants
- Dry Cleaning Stores and Garment Plants
- Commercial Business (Offices, Spas, Fitness Centers, Supermarkets, Shopping Centers, Malls, Department Stores)
- Casinos, Hotels, Motels, Multiple-Dwelling Units
- Housing Authorities, Apartments (including high-rises and some condominiums)
- Places of Public Assembly (stadiums, coliseums, theaters, churches etc.)
- Ice Plants; Ice Rinks
- Municipal complexes, including Housing Authorities, Fire/Police Stations, and Community Centers.

Listing of Services Provided by the BB&PVC

- ASME Accreditation as an Authorized Inspection Agency to provide Quality Assurance Program (QCP) for boiler and pressure vessel industry through implementation and monitoring of quality control inspection systems during the manufacturing process.
- Promotes the establishment of manufacturing, maintenance, and repair standards for boiler, pressure vessel and refrigeration safety.

- In accordance with the BPV&RL, establish criterion for the licensing of inspectors, stationary (steam, power plant, cogens), and refrigeration engineers, and boiler operators.
- Develop and implement license examinations current with technology trends for stationary and refrigeration engineers and boiler operators.
- Administer and oversee stationary, refrigeration engineer and boiler operator's license examination throughout the state.
- Provide to the public and industry safety and hazard alerts and other pertinent information related to ensuring public safety and health.
- Plan and conduct training seminars for insurance inspectors and code enforcement groups.
- Investigate accidents and code compliance issues for boiler, pressure vessel and refrigeration plants under the jurisdiction of the BB&PVC.
- Create rules and regulations for the enhancement of safety in boiler, pressure vessel and refrigeration plants in New Jersey.
- Has representation on the American Society of Mechanical Engineers (ASME), the National Board of Boiler and Pressure Vessel Inspectors (NBBPVI) and vote on consensus standards affecting the industry in New Jersey.

FREQUENTLY ASKED QUESTIONS (FAQS)

Q What is a boiler?

A Boiler means a closed vessel in which water is heated, steam is generated, steam is superheated, or any combination thereof, under pressure or vacuum for external use by the direct application of heat. The term "boiler" shall include fired or waste heat systems for heating or vaporizing liquids other than water where these systems are separate from processing systems and are complete within themselves.

Q What is a pressure vessel?

A A pressure vessel is similar to a boiler except that the pressure that makes it hazardous is obtained from an external source. It is defined as a vessel in which the pressure is obtained from an external source, or by the direct application of heat from a direct or indirect source. Existing pressure vessels must be built to Codes and Standards adopted by reference as established by the provisions of N.J.A.C. 12:90.

Q What is the requirement for the safe operation of pressure vessels in New Jersey and how often must they be inspected?

A Pressure vessels outnumber boilers by a ratio of about 3:1, thus safe installation, operation, maintenance and repair are mandatory. The inspection requirements are established under the provisions of law at N.J.S.A. 34:7-14 et seq., and promulgated by regulation at N.J.A.C. 12:90-5.

Q Who is responsible for ensuring pressure vessels are installed, maintained, repaired and inspected?

A N.J.S.A. 34:7-26 provides that the owner, lessee, seller or operator has this ultimate responsibility and if they "sell, use, cause or allow to be used such equipment specified (boiler, pressure vessel, refrigeration system or similar equipment) in violation of any provision of the article shall be liable to a penalty assessment of not less than $500 nor more than $10,000 for each first offense and not less than $500 nor more than $25,000 for each subsequent offense..". In addition, the regulatory provisions at N.J.A.C. 12:90-5.2 "Compliance with reference standards" specifies the codes and standards adopted by reference in N.J.A.C. 12:90 for pressure vessels and paragraph 5.2(a) states "Unfired pressure vessels shall be constructed, installed, maintained, repaired and inspected in accordance with the standards adopted by reference." The BB&PVC adopts these codes and standards and they are mandated for use by all responsible parties. The codes and standards ASME, NB, and API have the specific safety elements and requirements for the owner, user, operator, installer, etc. to follow. The BB&PVC enforces these safety requirements and elements in New Jersey.

Q What is a Refrigeration system?

A Refrigeration system means a system that is a combination of interconnected refrigerant containing parts constituting one closed refrigerant circuit in which a refrigerant is circulated for the purpose of extracting heat. Refrigeration applications generally fall into five categories based upon their design function. These refrigeration designs may be grouped as:

1. domestic;
2. commercial;
3. industrial;
4. marine and transportation; and
5. air conditioning.

Q When should I contact the BB&PVC for an inspection of my equipment?

A To be compliant with the BPV&RL, equipment falling under the authority of the BB&PVC must be inspected prior to its use. According to the BPV&RL, an owner should contact the BB&PVC within thirty days of an installation. The BB&PVC will assign an inspector and in some cases can expedite the inspection of equipment.

Q What size boilers have to be inspected by the state?

A Boilers that capacities equal or ***exceed***:

1. 10 square feet of heating surface;
2. 10 kilowatts or 40,000 Btu per hour when those vessels serve a dwelling unit of six or more families or other dwelling units that may have accommodations for 25 or more people.

Q How often is a boiler and refrigeration system inspected in the State and what signifies that an inspection is valid and satisfactory?

A In accordance with the provisions established by the BPV&RL at N.J.S.A. 34:7-25 boiler and refrigeration plants shall be inspected at 12-month intervals. Hot water heating boilers by regulation at N.J.A.C. 12:90-4 shall be inspected internally at 24-month intervals and externally at 12-month intervals. Annual inspections are necessary for all steam boilers falling under the inspection criteria established by the BPV&RL. Whenever conditions warrant and in some cases, more frequently when abuse or unsafe conditions are noted, a six-month internal or external inspection is made on any system falling under the jurisdiction of the BB&PVC. The BB&PVC issues a Certificate when an inspection is satisfactory. This Certificate must be displayed prominently under glass in the plant office or equipment room. Failure to properly post and display the Certificate could subject the owner to a penalty assessment issued by the BB&PVC for violation of the BPV&RL.

Q Are there provisions for a pressure vessel owner-user to establish an in-house inspection program?

A Yes, the regulation N.J.A.C. 12:90-3.19 specifies the requirement to become an Owner-user inspection organization. (Contact the BB&PVC and request an Owner-User Inspection agency package).

Q Are Pressure Vessels as hazardous as boilers?

A It is obvious when viewing national accident reports that pressure vessels are hazardous when not properly maintained. Reports such as those published by National Board of Boiler and Pressure Vessel Inspectors (NBBPVI) at their website, www.nationalboard.org, detail inspection and accident activity across the United States and Canada. In New Jersey, no accident reporting mechanism exists to document a type of incident to a particular type vessel, even though boiler and pressure vessel incidents may occur.

Q When are Water Heaters inspected?

A Water Heaters are inspected when they equal or ***exceed*** the following:

1. a heat input of 200,000 Btu per hour;
2. a water operating temperature of 200°F;
3. a nominal water capacity of 120 gallons.

The water heater must also be serving a dwelling unit of six or more families or other dwelling units that may have accommodations for 25 or more people.

Q What type of refrigeration system is inspected?

A Refrigeration/Air Conditioning systems are inspected when they meet the criteria as follows:

1. Systems using refrigerants of a flammable, highly toxic nature of over three tons or more of refrigerating capacity;
2. Systems using refrigerants of a flammable, highly toxic or toxic nature requiring over 6 driving horsepower or more;

3. Systems using refrigerants of a nonflammable and nontoxic nature of over 18 tons refrigerating capacity or more;
4. Systems using refrigerants of a nonflammable and nontoxic nature requiring over 36 driving horsepower or more;
5. Systems using refrigerants of a nonflammable and nontoxic nature operating over 15 psig or more, regardless of capacity.

Q When a new installation of a boiler is to be performed, what are the owner and the municipal code official's responsibility?

A The Uniform Construction Code (UCC), N.J.A.C. 5:23, is the municipal officials' code. An owner must obtain the appropriate permits from the municipality. For a Temporary Certificate of Occupancy/Certificate of Occupancy (TCO/CO), the UCC code must be followed. The boiler regulation at N.J.A.C. 12:90-4.2 references N.J.A.C. 5:23-3.20 for guidance and at N.J.A.C. 12:90-4.10 "Inspection of Boilers", the boiler regulations detail what size equipment falls under the jurisdiction of the BB&PVC. The statutes at N.J.S.A. 34:7.2 stipulate that it is the owner's responsibility to provide proof of inspection. However, the municipal official should let the owner of the equipment know that they must obtain an inspection by the BB&PVC. When new or replacement equipment is installed, the owner has 30 days to notify the BB&PVC so that an inspector can be dispatched to perform the inspection and register the equipment. New or replacement equipment inspections shall only be performed by the BB&PVC. In some cases, you may not be able to obtain a TCO or CO until this inspection is satisfied. The owner may select the State or have an authorized insurance company inspector perform all subsequent inspections at their location.

Q How much are the inspection fees for field inspection of boiler, pressure vessels and refrigeration systems inspected by the State?

A The fees are in accordance to the following schedule:

Boilers	
Ten and not over 60 square feet	$80.00
60 and not over 1,000 square feet	$110.00
1,000 square feet and over	$150.00
Pressure Vessels	
Vessels up to 30 square feet	$20.00
Vessels over 30 but not over 60 sq. ft.	$40.00
Vessels over 60 but not over 100 sq. ft.	$60.00
Vessels over 100 sq. ft.	$80.00
Refrigeration	
Over three and under 25 tons	$110.00
25 tons and over, but not less than 300 tons	$150.00
300 tons and over	$200.00

Note: If you are seeking authorization as an Owner-User Inspection Organization, contact the BB&PVC by one of the methods indicated below.

Q How do I contact the Bureau for an inspection or if I have a question?

A All correspondence must be addressed to the BB&PVC at the address noted below. In addition, you may call or email the BB&PVC as indicated below.

Address all Written Correspondence to:

Department of Labor and Workforce Development
Labor Standards and Safety Enforcement
Division of Public Safety and Occupational Safety & Health
Bureau of Boiler and Pressure Vessel Compliance
P.O. Box 392
Trenton, NJ 08625-0392

Voice: (609) 292-2921
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