

## CHAPTER 218.

### MACHINERY (SAFE WORKING AND INSPECTION).

#### MACHINERY (SAFE WORKING AND INSPECTION) RULES

*made by the Governor in Council under section 16.*

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Citation.

1. These rules may be cited as the Machinery (Safe Working and Inspection) Rules.

2. In these rules, unless the context otherwise requires—

Interpreta-  
tion.

“The Board” means the Machinery Board appointed by the Governor and shall consist of a chairman and such number of persons as the Governor may appoint as members of the Board;

“boiler” means any closed vessel used for the purpose of generating steam under pressure;

“capacity,” in relation to a boiler, means the capacity thereof, steam and water combined;

“circuit” means an electrical circuit forming a system or branch of a system;

“conductor” means an electrical conductor arranged to be electrically connected to a system;

“covered with insulating material” means adequately covered with material of such quality and thickness that there is no danger by external contact;

“dead,” in relation to electricity, means at or about zero potential and disconnected from any live system;

“District Commissioner” includes the Commissioner, Headquarters Judicial and Freetown Police Districts;

“earthed” means connected to the general mass of earth in such manner as will ensure at all times an immediate discharge of electrical energy without danger;

“electrical apparatus” includes all apparatus, machines and fittings in which conductors are used, or of which they form a part;

“elevator” means any elevator, lift, hoist or other apparatus used for the conveyance of persons or goods by means of a car, cage, cradle or other receptacle in a hatchway on fixed guides;

“engine” means and includes any arrangement of machinery and any prime mover in the form of machinery which converts physical into mechanical power;

“Engineer” means a person qualified by virtue of training and experience to superintend the operation and maintenance of machinery;

“gauge pressure” means the pressure in excess of atmospheric or zero pressure, or, in the case of vacuum pressure, the extent of vacuum produced below atmospheric pressure;

“hatchway” means any vertical or inclined way in which an elevator is operated;

Cap. 218. “inspector” means an Inspector appointed under section 11 of the Machinery (Safe Working and Inspection) Ordinance;

“insulated” means covered with, or isolated by, insulating material;

“live,” in relation to electricity, means electrically charged.

“low pressure,” in relation to electricity, means a pressure normally not exceeding 250 volts;

“machinery” means all mechanical appliances and all electrical apparatus of whatsoever kind and any part thereof and includes any engine, truck, haulage rope, and line of rails;

“metallic covering” means iron or steel armouring, with or without a lead or other metallic sheath as the conditions of the case may require, or an iron or steel pipe surrounding two or more conductors;

“owner” means the owner of any works and includes the manager of such works, the agent of such owner and any hirer using machinery, his manager or agent; in the case of Government Machinery “owner” means the head of any department of Government using or in control of machinery;

“pressure,” in relation to electricity, means the difference of electrical potential between any two conductors, or between a conductor and earth;

“serious personal injury” means such an injury as in opinion of a medical practitioner may result in the injured being incapacitated from work for at least fourteen days;

“skilled person” means a person who has been sufficiently instructed in the particular work which he is required to do to appreciate the dangers attaching thereto;

“system” means an electrical system in which all conductors and apparatus are electrically connected to a common source of electro-motive force;

“works” means and includes any place or premises, including any mine, in which machinery is or may be erected or installed, but does not include any place or premises used solely for residential purposes.

PROVISIONS RELATING TO MACHINERY GENERALLY.

3. (1) Every owner shall have in his possession a printed copy of these rules, and, for the purpose of making known the provisions thereof to all persons employed on or about machinery, an abstract of the portions of these rules directly concerning such persons shall be displayed at suitable places at the works, where it may conveniently be read.

Owners to possess these rules and to display abstract thereof.

(2) No person shall remove, destroy or deface any abstract of these rules when displayed in accordance with this rule.

4. Every owner shall explain or cause to be explained to all illiterate persons employed on or about the machinery in the works such provisions of these rules as directly concern the work upon which they are engaged.

Illiterate persons to be informed of rules affecting them.

5. (1) Every owner shall be responsible that all reasonable precautions are taken to ensure the safety of persons employed at the works.

Responsibility of owners and engineers.

(2) Where an engineer has been placed in charge of machinery and boilers, he shall be responsible for compliance with these rules in so far as they affect the safety of persons, but the appointment of such a person shall not relieve the owner of any responsibility.

(3) Every such owner shall be responsible for ensuring that all safety appliances at the works are maintained in good working condition and properly used and shall stop the working of any machinery the using of which appears in any way to be or to have become dangerous.

6. All machinery in every works shall be in charge and under the supervision of competent persons.

Competent persons to be in charge of machinery.

7. No person having charge of any machinery which, for safety of limb or life, requires constant supervision shall for any reason whatever absent himself or cease to have continual supervision of such machinery during the periods for which he is in charge unless he be replaced by a competent person, nor shall any person in charge of such machinery be caused or

Responsibility of person in charge of machinery.

allowed so to work for more than ten hours a day; provided that this limit may be exceeded where ordered by the owner in cases of emergency or where written permission in that behalf has been granted by an Inspector.

Machinery to be kept in repair and protected from weather.

8. All machinery in use in every works shall be kept and maintained in a fit state and in thorough repair and all stationary machinery in use shall be adequately protected from the inclemency of the weather.

Fencing of dangerous places and restriction of entry therein.

9. (1) Every owner shall cause all moving parts of machinery and dangerous places, such as elevated platforms, pits, trap-holes, and such other places as an Inspector may in writing direct, to be fenced off in such a way as effectively to safeguard persons who may approach thereto.

(2) No person shall, except if his duty necessitates it, enter within an area so fenced off.

Restriction of persons entering places where machinery is installed.

10. No person shall, without the authority of the owner of any works, enter any place where machinery is installed and the owner thereof shall cause notices to this effect to be displayed at all entrances.

Persons not to wear loose clothing when near moving machinery.

11. No person engaged in work which necessitates close proximity to any exposed part of moving machinery shall wear loose outer clothing.

Skilled persons only to undertake repairs, etc., on moving machinery.

12. The repairing, adjusting, cleaning, or lubricating of machinery in motion shall not be undertaken by any person other than a skilled person where there is a risk of personal injury, and then only when it is impracticable to stop such machinery, and no unskilled person shall be required or permitted to undertake such work.

Governor may require appointment of engineers.

13. The Governor may, on the advice of an Inspector, require the owner of any works to appoint one or more engineers, where in the opinion of the Inspector the size of the works, having regard to the number of places where machinery is erected, renders such appointment necessary and the owner shall, without unreasonable delay, make such appointment on being required so to do.

14. The general charge of any machinery shall in no case be exercised by two or more engineers.

Joint charge not exercisable by two or more engineers.

15. No engineer shall be in general charge of machinery at more than one works except with the written permission of an Inspector.

Engineers not to be in charge at more than one works without permission.

16. (1) At every works having machinery developing more than 250 horse-power, or where any unit thereof develops more than seventy-five horse-power, all such machinery shall be under the general charge of an engineer.

General charge and inspection by engineers.

(2) At every works, having machinery developing less than 250 horse-power, all such machinery shall be inspected regularly by an engineer.

17. (1) It shall be the duty of every person engaged in the working of any machinery where he notices anything in connection therewith which might be dangerous to life or limb to report the same without delay to the person in charge of such machinery.

Duty of persons to report incidence of danger.

(2) It shall be the duty of every engineer or person having charge of any machinery to report to the owner every such mechanical or electrical defect or other condition of such machinery as may be or become dangerous to life or limb.

18. (1) Every owner shall ensure that at all places where machinery is erected, in the proximity of which persons may be working or moving about, such adequate light exists or is provided whereby the external moving parts of such machinery are clearly distinguished.

Lights.

(2) Where night work is required at any works the owner thereof shall provide adequate stationary lights therein.

19. Automatic devices for the lubrication of all machinery shall be provided by every owner whenever practicable.

Automatic devices for lubrication.

20. All winches and other forms of winding gear and such bolts or other fittings of drums, brakes and clutches as may become a source of danger should they become loosened shall be rendered secure by means of suitable locking devices.

Winches, bolts, etc., to be made secure.

Compressed  
air or gas  
receivers,  
intercoolers  
etc.

21. (1) All compressed air or gas receivers, intercoolers, and their connections to air or gas cylinders shall be kept clean and free from carbonised oil or other materials liable to ignition, and shall be opened and examined in this respect by the engineer in charge, or other duly authorised and competent person at intervals not exceeding twelve months.

A written record of such inspection signed by the person making it, who shall be held responsible for compliance with this rule, shall be in the owner's possession and open to inspection by an Inspector.

(2) Every compressed air or gas receiver shall be fitted with an efficient oil drain placed at the lowest point on the receiver. Any accumulation of oil in such receiver shall be removed by means of such oil drain at least every eight hours while the receiver is in use.

(3) The supply of air for compressed air receivers shall be drawn from the purest and coolest source available.

(4) All cylinders, receivers, or other vessels that are subjected to a higher pressure than atmospheric pressure, other than the working cylinders or chambers of heat-engines, air-engines, or portable gas cylinders, shall be fitted with satisfactory apparatus for showing the internal pressure; also with a lock-up relief or safety valve or other apparatus capable of automatically preventing any undue accumulation of pressure above the safe working limit of the vessel. The owner shall test or cause to be tested such apparatus at intervals not exceeding three years by hydraulic pressure to the extent of one and one-third times the working gauge pressure. A written record of such test, signed by the person conducting the same shall be in the owner's possession, and open to inspection by an Inspector.

Examination  
and tests by  
Inspector.

22. (1) An Inspector shall have the power to examine periodically all machinery externally and internally, and shall carry out such tests thereon as he may consider necessary.

(2) Whenever an internal examination or hydraulic test is intended the Inspector shall, in consultation with the owner, fix the date and hour of such examination or test, so as to take the interests of the owner as much as possible into consideration.

Cleaning,  
etc., of  
machinery  
prior to  
examination  
by Inspector

23. Where an examination or test of machinery is to take place as provided by the preceding rule the owner shall ensure that all parts of the machinery are thoroughly cleaned and prepared for such examination or test and, if so required by an

Inspector, in accordance with such instructions as the Inspector may see fit to give in respect thereto.

24. Every owner shall, when required by an Inspector for the purposes of the examination of machinery, place at his disposal, free of cost, such workmen, lights, implements and stores as may be considered necessary by the Inspector for carrying out such examination.

Provision of workmen, lights, etc., for examination by Inspector.

25. Every owner shall, when required by an Inspector to do so, furnish him or his representative with such returns or data as may reasonably be necessary for the purpose of preparing statistical information and the Inspector may fix the time within which such returns or data shall be furnished.

Returns, etc., required by Inspector.

26. (1) Every instruction, requirement and decision given by an Inspector under these rules shall be in writing and shall be carried into effect without delay by every person affected thereby:

Instructions of Inspector to be in writing and to be carried into effect.

Provided that where any such person shall object to the same he may within fourteen days of the receipt thereof lodge a written notice of appeal, setting forth the grounds of his objection, with the Chief Inspector of Machinery who shall forthwith transmit the same to the Chairman of the Board.

Appeals therefrom.

(2) The Board may, after considering all such matters as appear to them to be material, uphold and maintain, vary or revoke the same, and any instruction, requirement or decision so varied shall be deemed to be the instruction, requirement or decision of the Inspector who gave, issued or made the same.

#### SPECIAL PROVISIONS RELATING TO BOILERS.

27. No person shall use any boiler except under the authority of a permit in writing granted by an Inspector who shall not grant such permit except he shall be satisfied with the results of a test made by water pressure and such other and additional test as he may see fit to determine. Such permit shall be refused if the Inspector shall be of the opinion that the using of the boiler might reasonably give rise to any serious hindrance, damage or danger to any person or to surrounding premises.

Boilers not to be used except under authority.

28. No person shall use any boiler which has been out of use for a period of twelve months or more except under the authority of a permit granted in manner provided by the preceding rule.

Boilers out of use for twelve months or more not to be used except under authority.

Stationary  
boilers  
removed  
from original  
position not  
to be used  
without  
authority.

29. Notwithstanding anything contained in the last two preceding rules, no person shall use any stationary boiler, in respect of which a permit to use it had been granted under those rules, which has been removed from the place or position in which it was erected at the time when such permit was granted except under the further authority of a permit granted by an Inspector in accordance with the provisions of rule 27 of these rules.

Certain  
boilers to be  
provided  
with feeding  
apparatuses,  
etc.

30. (1) Every boiler with a capacity of two hundred and fifty gallons or over shall be provided with two reliable feeding apparatuses, each of which is capable of amply supplying the boiler with water. One such feeding apparatus shall be either a power pump or an injector. Two or more boilers combined for permanent joint working shall, for the purposes of this rule, be regarded as one boiler. Each such feeding apparatus shall be entirely independent of the other.

(2) One such feeding apparatus shall be sufficient for boilers of less than two hundred and fifty gallons capacity.

(3) At the place where the delivery pipe enters the boiler, the same shall be provided with a self-acting non-return valve (check) and a stop-cock or wheel-valve, the latter to be placed between the check and the boiler.

Water  
gauges and  
cocks.

31. (1) Every boiler shall be fitted with at least two reliable apparatuses, of types approved by an Inspector, for ascertaining the true level of the water in the boiler. One of these shall be a glass water-gauge, with the proper blow-through cocks.

(2) When the other apparatus referred to in sub-rule (1) of this rule consists of test-cocks, these shall each be separately connected to the boiler, and the lowest one shall be at the height of the fixed lowest water level.

(3) One water-gauge shall be sufficient for boilers of less than twenty gallons capacity.

(4) The fixed lowest water level shall be indicated by conspicuous marks on the water-gauge as well as on the boiler shell or masonry.

Safety-  
valves.

32. (1) Every boiler shall be provided with at least two reliable safety-valves which shall be loaded so that they will lift when the authorised working gauge pressure is reached. The area of opening for discharge of steam of these valves shall be sufficient to prevent accumulation of steam pressure in





excess of ten per cent. above that for which the valves are set if any one of the safety-valves fails to operate.

(2) Safety-valves shall be attached directly to the shell of the boiler or steam dome: no stop-valve shall be allowed to intervene.

(3) One of these safety-valves shall be locked and only accessible to the person in charge of the boiler. This lock-up valve shall have an area of not less, and a load not greater, than those which are not locked up.

(4) If two or more boilers have a steam drum in common from which they cannot be disconnected, two safety-valves are sufficient, provided that each is of the required area.

(5) A suitable safety-valve, separate from any stop valve, shall be sufficient for boilers of less than two hundred and fifty gallons capacity, for super-heaters that can be shut off from boilers and for economisers and for such apparatus using steam of a higher pressure than that of the atmosphere for cooking and heating purposes. This safety-valve shall be locked up or sealed and only accessible to the person in charge of the boiler. This safety-valve shall be so adjusted as to prevent the boiler, super-heater, economiser or other apparatus using steam of a higher pressure than that of the atmosphere for cooking and heating purposes, being worked at a pressure greater than the maximum permissible working pressure and shall be fixed directly to, or as close as practicable to, the boiler, super-heater, economiser or other apparatus using steam at a higher pressure than that of the atmosphere for cooking and heating purposes.

**33.** (1) Safety-valves shall be so constructed that the valve can easily be freed from its seat at any time, and satisfactory provision shall be made to prevent the valves flying off in the case of the spring or lever breaking or by the load being removed suddenly in any way by accident or other cause.

Construction  
of safety-  
valves.

(2) Safety-valves loaded by a weight or spring acting on a lever shall be so constructed that the load acts only upon the extreme end of the lever.

When safety-valves are loaded directly by springs, the compressing screws shall abut against metal stops or washers, at the working load compression.

(3) The spring shall have a sufficient number of coils to allow of a compression under the working load of at least one-quarter the diameter of the valve.

(4) In the case of a boiler of a locomotive or locomobile, safety-valves shall be spring-loaded; in the case of a boiler which is ordinarily stationary when in use, at least one safety-valve shall be loaded by weight, acting direct or with leverage, unless the pressure exceeds 180 lb. per square inch.

Load of  
safety-  
valves.

34. (1) An Inspector may fix the limits of the load to be placed on the safety-valves, and after he shall have so fixed the limits no weights, springs or levers shall be used other than those approved by him.

(2) No person shall place an undue weight on the safety-valve of a boiler or increase the load in any way beyond the limit fixed by an Inspector under this rule.

Low water  
contri-  
vances.

35. Every boiler shall be provided with some contrivance by which any deficiency of water is made known, independent of any personal observation. Such contrivance may be either a steam whistle operated by a float or other means, a fusible plug, or any other contrivance, subject in every case to the approval of an Inspector, who shall decide as to the reliability of the appliance.

Pressure  
gauges.

36. (1) Every boiler shall be provided with at least one reliable pressure gauge. The dial shall be graduated to show pressures in English pounds per square inch, and on it the authorised working gauge pressure shall be distinctly marked with a red line. When the authorised working gauge pressure is less than two hundred pounds per square inch the dial shall be graduated to show pressures on not less than fifty per cent. nor more than one hundred per cent. above the authorised working gauge pressure. Where the authorised working gauge is two hundred pounds per square inch or more, the dial shall be graduated to show pressures not less than one hundred pounds per square inch above the authorised working gauge pressure.

(2) The pressure gauge shall have separate direct communication with the steam space within the boiler and be capable of being shut off therefrom. The cock or valve for this purpose shall be in sight.

Test gauge  
contri-  
vances.

37. Every boiler shall be provided with a fitting for the attachment of an Inspector's test gauge, which fitting shall be so placed as to enable a person to read the test gauge and the boiler gauge from one place.

38. (1) Every boiler shall be provided with a blow-off cock or valve, placed at its lowest point, and connected either by flange direct or by means of a flanged pipe. Blow-off  
cocks.

(2) Where two or more boilers have a mud drum in common, one blow-off cock or valve shall be sufficient.

(3) The blow-off cock or valve and all fittings connected with the same shall be constructed of metal other than cast iron.

(4) When connecting pipes are fitted they shall not be in contact with the masonry; they shall be joined by flanges, and, if the flange is not solid with the pipe, the latter shall pass through the flange and be riveted over on the inside in addition to any other connection between the flange and the pipe, such as a screw-threaded or other similar connection.

(5) The discharge from every blow-off cock shall be conducted by means of a pipe into an open tank, drain or sump so situated and guarded as to prevent danger to persons.

(6) The blow-off cocks of two or more boilers shall not be allowed to discharge into a common pipe except under the authority of a permit in writing granted by an Inspector.

(7) When a boiler is being emptied and opened for cleaning, for repairs or for any other purpose, and while such cleaning or repairs are in progress, special precautions shall be taken by the owner of the works to ensure the safety of persons employed thereat or who may be in the vicinity of the same. Before any person is allowed to enter the boiler or its flues the owner shall satisfy himself that they are in a safe condition for persons to enter, and that the steam-stop, feed, blow-off and all other valves or cocks which may be a source of danger are closed and securely locked or lashed in this position, and that they are so maintained during the period of cleaning or repairs. The owner shall not allow water to be thrown on hot flue dust or ashes in any confined space or where danger may arise therefrom.

(8) The owner shall be held responsible for the observance of the requirements of this rule and generally for the safety of persons employed in or about a boiler in connection with cleaning or repairs.

(9) The owner may, however, delegate this responsibility to a competent and reliable person specially appointed by him in writing whose name shall be entered in the boiler log book.

Notice to be given to Inspector in certain events.

**39.** Owners of boilers shall give written notice to an Inspector as follows—

(1) where any important repair is to be executed on a boiler, such as general re-tubing, renewal of furnaces or flues, fixing of new plates or patches, changing stays and the like, such notice shall be given prior to the execution of the repair;

(2) where the working of a boiler is entirely suspended, such notice shall be given within seven days thereof;

(3) where the ownership of a boiler is transferred from one owner to another, such notice shall be given within seven days by both parties;

(4) on the removal of a stationary boiler from one place to another, such notice shall be given within seven days of such removal;

(5) on the removal of a boiler which is not stationary, where such removal is other than a temporary removal, such notice shall be given within seven days of such removal;

(6) where a boiler is damaged, such notice shall be given forthwith.

Pressure defects.

**40.** If it appears to an Inspector from examination that a boiler can no longer be worked with safety at the originally fixed authorised gauge pressure, and the owner declines to have the necessary renewals or repairs made, the Inspector shall fix a new authorised pressure at which the boiler may continue to be worked, and will mark this on a metal plate provided for that purpose and attached to the boiler and no person shall use the boiler, or cause it to be used, at a pressure higher than that so marked.

Hydraulic testing pressure.

**41.** The hydraulic testing pressure applied to any boiler shall not exceed one and a-half times the working pressure plus fifty pounds per square inch: provided that boilers working at a pressure not exceeding 100 pounds per square inch, shall be tested with double the authorised working gauge pressure. The test shall be considered good in which the boiler has borne the test pressure to the satisfaction of the Inspector.

Masoning in and encasing of boilers.

**42.** (1) If the examination of a boiler cannot otherwise be properly executed, any parts, or the whole, of the masonry or casings shall be removed by the owner if an Inspector so requires.

(2) Except under the permission of an Inspector no boiler shall be masoned-in or otherwise encased prior to the test or

examination for which provision is made by rule 27 of these rules.

(3) Whenever the masonry or casing of any boiler in use has been removed, either for the purpose of its renewal or for repairs to the boiler, and the stoppage of work occasioned thereby provides sufficient time for the external examination of the boiler, such masonry or casing shall not be replaced before permission is obtained from an Inspector.

43. No portable boiler or boiler of a locomotive or locomobile shall be used or worked in any district except under the authority of a permit in writing granted in that behalf by an Inspector who may impose thereon such conditions as he may see fit.

Portable  
boilers, etc.,  
not to be  
used in  
district  
except under  
permit.

44. (1) Every owner shall keep a record or log book of the working of each separate boiler at his works and shall without delay enter in such book the dates on which the boiler is cleaned or examined, and the condition of the boiler at such cleaning or examination, and a full report of any alteration or repair to the boiler. Each entry in this book shall be signed by the owner or his representative.

Log books.

(2) The result of each examination by an Inspector shall be entered by him in the boiler log book.

#### SPECIAL PROVISIONS RELATING TO ELECTRICAL APPARATUS

45. (1) All electrical apparatus and conductors shall be sufficient in size for the work they may be called upon to do, and shall be so selected, arranged, installed, protected, worked and maintained as to prevent danger so far as is reasonably practicable.

Prevention  
of danger  
from electri-  
cal appara-  
tus and  
conductors.

(2) Where electrical energy is transformed suitable provision shall be made to guard against danger by reason of lower pressure apparatus becoming accidentally charged above its normal pressure by leakage from or contact with the higher pressure apparatus.

46. The owner of every works where any electrical apparatus is installed shall keep and maintain a plan or plans showing clearly the positions and sizes of all such apparatus whether above or below ground, and showing the isolating arrangements of the various circuits of the system. Such plan or plans shall

Plans of  
electrical  
apparatus to  
be kept.

be kept up to date and shall be open to inspection by an Inspector.

Certain  
notices to be  
displayed.

47. The owner of every works where any electrical apparatus is installed shall display or cause to be displayed the following notices, constructed of durable material, in appropriate places where they shall be clearly legible—

(a) a notice warning persons of the proximity or presence of dangerous electrical apparatus.

(b) a notice prohibiting unauthorised persons from handling or interfering with electrical apparatus of any description.

(c) a notice in the form of an illustrated chart explaining the treatment for electrical shock.

Generating  
plant, etc.,  
to be fenced;  
prohibition  
of entry  
therein by  
unauthorised  
persons, etc.

48. (1) The owner of every works shall cause all places or premises therein in which are situated any electricity generating plant, transforming, switching or linking apparatus to be adequately fenced off or enclosed and at the entrance to each such place or premises he shall cause to be displayed a legible notice, constructed of durable material, prohibiting the entry therein of unauthorised persons.

(2) Where such notice has been displayed no unauthorised person shall enter therein.

(3) Where any such places or premises are for any reason unattended the person in charge thereof shall keep the same closed and locked.

Switch-  
boards.

49. All switchboards shall be so adjusted as to have a clear space at the back thereof of at least four feet. Such space shall not be obstructed in any manner and shall be kept closed and locked at all times except during periods of inspection, alteration or repair;

Provided that this rule shall not apply to the following—

(a) switchboards which have no live conductors accessible from the back,

(b) switchboards the backs of which are only accessible at the back through an opening in the wall or partition against which they are placed, such opening being kept closed and locked, and

(c) switchboards for pressures not exceeding low pressure.

Protection  
of switch-  
gear, termi-  
nals, etc.

50. (1) All switch-gear, terminals, cable ends, cable joints and other connection of every electrical apparatus, together with all live parts thereof, shall be so protected or enclosed as to prevent accidental contact by persons and danger from electrical faults, arcs, fire and water.

(2) An Inspector may, in any case, require such protection or enclosure to be carried out to his satisfaction.

Overhead  
lines.

51. (1) On every overhead line all conductors shall be efficiently insulated and secured, and every precaution shall be taken to prevent such conductors from falling away from their supports.

(2) Adequate means shall be provided to render any such live conductor dead in the event of its falling, due to breakage or otherwise.

(3) In the design of such overhead lines the minimum factors of safety shall apply to each support and shall refer to the breaking load of the structure. Such minimum factors of safety shall be subject to the approval, in writing, of the Chief Inspector of Machinery.

(4) Such overhead lines may be erected along or across thoroughfares, roads, railways, tramways or buildings subject to the prior approval, in writing, of an Inspector who may impose thereon such conditions as he may consider necessary.

(5) No overhead line conductor shall cross over or under any other line conductor without efficient precautions being taken to prevent the contact of such conductors.

(6) The minimum vertical height of electrical conductors and other wires from the ground, except in the case of electric trolley wires and service lines for lighting domestic use and telephone lines, shall be sixteen feet.

(7) No overhead lines shall be erected nearer than 300 feet to any explosive magazine, except with the previous approval, in writing, of the Chief Inspector of Machinery.

(8) All supports shall be of substantial construction and shall be placed at intervals of not more than 200 feet apart when the direction of the line is straight, and of not more than 150 feet apart when the line is not straight, provided that such intervals may be varied with the approval, in writing, of the Chief Inspector of Machinery.

(9) Service lines shall be connected to line conductors at a point of support only and shall be efficiently insulated.

(10) All systems of overhead lines shall be suitably protected against the effects of atmospheric electricity.

(11) No telephone lines shall be placed on the same support as other overhead lines except for the purpose of direct communication between power houses and sub-stations and then only with the prior approval of the Chief Inspector of Machinery.

(12) Every overhead line, including its supports and all structural parts and all electrical appliances and devices belonging to or connected with the line, shall be regularly inspected and efficiently supervised and maintained as regards electrical and mechanical conditions.

Underground  
cables.

**52.** All underground cables, other than signalling wires and flexible cables for portable apparatus, shall, unless exempted, in writing, by the Chief Inspector of Machinery—

(a) have connections to their conductors made at properly constructed joints only,

(b) be protected by a suitable metallic covering electrically continuous throughout, and such covering shall be earthed, and

(c) be adequately supported.

Insulation  
or earthing  
of certain  
parts of  
electrical  
apparatus.

**53.** (1) All accessible metallic portions of every electrical apparatus which, though normally not forming part of an electrical circuit, may accidentally become live at a pressure exceeding low pressure to earth shall be either protected by an insulating covering or shall be connected to earth by a conductor of adequate cross-sectional area.

(2) Every flexible wire for electrical apparatus, for alternating currents or for apparatus above 150 volts direct current, shall be connected to the system either by efficient permanent joints or connections, or by a properly constructed connector.

(3) In all cases where the person employed in any works who handles electrical apparatus or pendant lamps with switches for alternating current, or pressures above 150 volts direct current would be liable to get a shock if the metal work of the electrical apparatus becomes charged, the metal work shall be efficiently earthed; and any flexible metallic covering of the conductors shall be itself efficiently earthed and shall not itself be the only earth connection for the metal of the apparatus. A lampholder



shall not be in metallic connection with the guard or other metal work of an electrical lamp.

(4) In all works and in any place where the pressure exceeds low pressure, the electrical apparatus and its flexible wire shall be controlled by efficient means suitably located and capable of cutting off the pressure, and the metal work shall be efficiently earthed independently of any flexible metallic cover of the conductors, any such flexible covering shall itself be independently earthed.

54. (1) No examination, repairs, or alterations necessitating the dangerous approach to or the handling of electrical apparatus shall be carried on while such apparatus is live unless such work be done by or under the constant personal supervision of a skilled electrician or person in control of such apparatus.

Precautions  
to be taken  
when  
examining  
electrical  
apparatus.

(2) Whenever any work is to be carried out on any electrical apparatus which has been disconnected from all sources of supply adequate precautions shall be taken, by earthing or other means—

(a) to discharge electrically such apparatus and any other apparatus adjacent thereto if there be danger from such other apparatus, and

(b) to prevent any such apparatus or conductor from becoming accidentally or inadvertently charged whilst persons are working thereon.

55. No person other than a skilled person or person in control shall enter or be caused or permitted to enter transformer houses or switch-houses unless all live conductors therein which are not adequately insulated against the possibility of inadvertent human contact are effectively bratticed off; provided that the skilled person may in case of necessity be assisted by any unskilled person acting under his immediate personal supervision.

Skilled  
persons only  
to enter  
transformer  
and switch  
houses.

For the purpose of this rule "a skilled person" means a person who has been sufficiently instructed in the particular work that he is called upon to do to appreciate the dangers attaching thereto.

56. Where in any premises in which electrical apparatus is installed there may be risk of igniting gas, coal-dust or other explosive material flame-proof or explosion-proof apparatus shall be provided by the owner.

Provision of  
flame-proof  
and explo-  
sion-proof  
apparatus.

## SPECIAL PROVISIONS RELATING TO TRACTION.

Traction.

57. (1) Where traction is operated by machinery other than a locomotive a signalling apparatus shall be provided at all stations by which distinct signals can be given—

(i) to the engine-driver if the traction is operated by machinery.

(ii) to the brake operator if the traction is operated by gravity and exceeds 150 feet in length.

(2) On every inclined plane at intervals not exceeding 500 feet one or more effective contrivances shall be provided and used to arrest trucks or other vehicles should they run or move out of control down such inclined plane; provided that this sub-rule shall not apply to inclined planes where the gradient is such that trucks cannot run out of control. Where trucks are to be operated by a rope, they shall be properly attached to the rope before being moved into, or placed in, a position from which a runaway can occur.

(3) Where the before-mentioned effective contrivances are hand-operated, every person operating the same shall be afforded adequate protection from any truck or vehicle moving out of control.

Persons not to drive engines or operate brakes except under authority.

58. No person shall drive any engine or operate any brake of any machinery on an inclined plane or haulage way except under the authority of an appointment in writing made by the manager or person in charge of the works.

Persons not to travel on truck or haulage rope without authority.

59. No person shall travel on or in any truck or on the haulage rope unless authorised to do so by the owner or person in charge of the works who shall not authorise the regular conveyance of persons in or on any truck or other means of conveyance on any haulage or inclined plane where traction is operated by machinery or gravity except under the authority of a permit in writing granted by an Inspector, who may impose thereon such conditions as he considers to be necessary for the safety of the persons to be conveyed.

Clearance between double lines.

60. Where a main travelling-way lies between a double line of rails, such lines shall be kept sufficiently far apart to allow a clearance of not less than two feet between any two trucks passing each other on the respective lines; provided that this regulation shall not apply to haulageways in which the speed of the trucks is less than four miles per hour and the grade less than one in twelve.

61. (1) Where in any works a tramway passes over a public railway line, electric, steam or other tramway at a level crossing, it shall be the duty of the owner of such works to cause a signalman bearing a red flag to be stationed at the crossing, and it shall be the duty of such signalman to warn people of the approach of the tramway trucks, and to prevent such trucks crossing the railway line while a train is approaching.

Level crossings.

(2) No tramway truck or train of trucks shall be run over any level crossing as specified above or over any level crossing of a road or pathway at a greater speed than four miles an hour.

### AERIAL ROPEWAYS.

62. (1) The minimum clearance from the ground of any conveyance on a ropeway shall, unless exempted by an Inspector, be not less than sixteen feet except within loading and unloading stations limits, and, if so exempted, not less than that authorised by the Inspector.

Aerial ropeways.

(2) The factors of safety of all parts of an aerial ropeway shall be subject to the approval, in writing, of an Inspector.

(3) No aerial ropeway may cross over any thoroughfare, road, tramway or building except under the authority of a permit in writing granted by an Inspector who may impose thereon such conditions as he may think fit.

63. No person shall travel on or by means of any aerial ropeway except under the authority of a permit in writing granted by an Inspector.

Persons not to travel on aerial ropeways except under authority.

### PROCEDURE IN CASES OF ACCIDENT.

64. Where any accident occurs at any works which results in the death or serious personal injury of any person the owner of such works shall, by the most speedy means available, report the same in writing to the Chief Inspector of Machinery and to the District Commissioner of the district in which the accident took place giving full particulars of the accident and, where practicable, shall also thus report the accident by telegraph or by telephone.

Report of accidents resulting in death or serious personal injury.

65. In every case where serious personal injury results in the death of the person injured after the report as required by the preceding rule has been made, or when any slight injury of which no such report was made is known to result in the death

Report of death resulting from injury.

of the person injured the owner shall give notice thereof in writing to the Chief Inspector of Machinery and the District Commissioner without delay.

*Locus in quo*  
to remain  
undisturbed  
following  
death.

66. Where personal injury immediately results in the death of the person injured, the place where the accident occurred shall, after the removal of the injured person, be left precisely as it was immediately after the accident until an Inspector or the District Commissioner has visited it and examined it: provided that, unless the discontinuance of work may endanger the lives of other persons or seriously impede the working, work shall not be resumed at such place without the prior approval of an Inspector.

Enquiries by  
Inspector.

67. (1) The Inspector on the receipt of the report of an accident shall, if he considers it to be necessary or if he is required by higher authority to do so, immediately proceed to the place where the accident has occurred and shall make enquiry into the circumstances which have caused it, and he shall, where practicable, inform the owner of his intention to carry out an enquiry.

(2) For the purpose of such enquiry an Inspector may—

(a) by summons require the attendance of such persons as he may think fit for the purpose of examination,

(b) require the production of any books, papers, and documents which he considers necessary for the purpose of such enquiry,

(c) administer an oath and require any person examined to make and sign declaration of the truth of the statements made by him in his examination; provided that no person so examined shall be compelled to answer any question which may incriminate him.

(d) award such fees for giving evidence as he may think fit.

Failure of  
witnesses to  
attend  
enquiries,  
refusal to  
answer  
obstruction  
of Inspector,  
etc.

68. No person shall, without reasonable cause, fail to comply with the terms of any summons of an Inspector as provided by the preceding rule, or refuse to be examined or to answer any question other than one which may incriminate him or otherwise impede an Inspector, or any person acting under his directions or orders, in the execution of his duty under the preceding rule.

**69.** On the conclusion of an enquiry held under the provisions of rule 67 of these rules the Inspector shall—

Inspector to report on conclusion of enquiry.

(a) issue to the owner a certificate that such enquiry has been held and setting out—

(i) the cause of the accident;

(ii) to whom blame (if any) is attributable, and

(iii) whether and by whom there was a contravention of these rules.

(b) furnish the Minister with a full report relating to the accident, and

(c) in the case of a fatal accident, and where it appears to the Inspector that there has been a contravention of these rules, report the result of the enquiry to the Coroner, where the accident took place in the Colony, or, where it took place in the Protectorate, to the District Commissioner of the district in which the accident took place.

**70.** (1) An Inspector may attend and appear at any inquest or inquiry into the cause of the death of any person resulting from an accident in any works and may examine any witness at such inquest or inquiry, subject to the ruling of the Coroner or the District Commissioner, as the case may be, on any matter of law.

The Inspector may appear at inquests, etc.

(2) At least twenty-four hours' notice of such inquest or inquiry shall be given to the Inspector by the Coroner or District Commissioner, as the case may be.

**71.** At every works there shall be kept by the owner thereof a register, and it shall be the duty of the owner of such works to record therein the particulars of all such accidents as are required by rules 64, 65 and 74 of these rules, to be reported to an Inspector and which have occurred at such works.

Register of accidents to be kept.

**72.** (1) At every works there shall be kept by the owner thereof such number of properly constructed ambulances and stretchers on wheels as an Inspector may, in writing, require having regard to the number of persons employed at the works and such ambulances and stretchers shall, at all times, be maintained ready for immediate use.

Provision of ambulances, stretchers, bandages, etc.

(2) At every works there shall be kept by the owner thereof a sufficient supply of splints, bandages, tourniquets, other surgical accessories as the size of the works and the number of persons demand, and a sufficient supply of an efficient antidote,

with instructions for the use of same, for treatment of cases of unconsciousness arising from heat stroke or inhalation of fumes or poisonous gas.

Medical aid,  
conveyance  
to hospital,  
etc.

**73.** When any person employed in or at any works receives injury by reason of his employment, the owner of such works shall be responsible that the injured person be sent to the nearest qualified medical practitioner, or, in the event of the injuries being too serious to permit of the injured person's removal, the nearest qualified medical practitioner shall be sent for. If the injured person is unable to proceed unaided to his abode or to a hospital, the owner shall immediately have such person conveyed thereto in the safest and quickest way at the expense of the owner of the works.

Reports on  
certain  
occurrences.

**74.** The owner of every works shall, without delay, report in writing to an Inspector every occurrence falling within any of the following classifications or of a nature similar thereto whether such occurrence involved personal injury or not:—

(a) In relation to any works:

(i) engine running out of control;

(ii) fracture of any essential part of winding engine, crank shaft, couplings, bearings, gearing, clutch drums or drum shaft;

(iii) fracture of winding rope or of its attachment to skip, cage, or drum;

(iv) fracture of pit head sheave or axle or bearings of same;

(v) jamming of skip or cage in shaft;

(vi) derailment of skip or cage by which, in the opinion of the owner, the winding rope is possibly over-strained;

(vii) skip or cage leaving guides in vertical shafts;

(viii) failure of efficiency of brake;

(ix) failure of safety catch to act when required, or the acting of the catch when not required during winding;

(x) failure of over-winding prevention device to act when required, or the acting of this device when not required;

(xi) any over-wind;

(xii) failure of depth indicator;

(xiii) extensive caving or subsidence in the ground or workings;

(xiv) accidental ignition or detonation of explosives;  
(xv) flooding of any considerable portion of workings, or failure of any dam or reservoir used for conserving water or slimes;

(xvi) any fire or any indication of recrudescence of fire or of spontaneous combustion in a mine or any explosion of gas or dust; and

(xvii) fracture or failure of any essential part of any machinery whereby the safety of persons may be endangered.

(b) In relation to any elevator:

(i) fracture or failure of any essential part of the winding machinery;

(ii) fracture of rope or ropes or attachments;

(iii) fracture of any sheave or axle or bearings of same;

(iv) jamming of car in hatchway;

(v) failure of efficiency of brake;

(vi) failure of safety catches to act when required, or their action when not required; and

(vii) failure of over-winding prevention device to act when required, or its action when not required.

#### OFFENCES AND PENALTIES.

75. Any person who shall—

Offences and penalties.

(a) contravene any provision of these rules, or

(b) use, cause or permit to be used any machinery which does not comply with any provision of these rules relating to such machinery, or

(c) use, cause or permit to be used any machinery without a permit or contrary to any term or condition imposed on a permit in any case where a permit to use it is required by these rules, or

(d) fail to comply with any instruction or requirement issued to him under these rules,

shall be guilty of an offence and shall, on summary conviction, be liable to a fine not exceeding fifty pounds, or to imprisonment for a term not exceeding six months, or to both such fine and imprisonment.

P.N.  
84 of 1953.

## MACHINERY (WOODWORKING) SAFETY RULES

*made by the Governor in Council under section 16.*

Citation.

1. These rules may be cited as the Machinery (Woodworking) Safety Rules.

Interpreta-  
tion.

2. In these rules—

“woodworking machine” means a circular saw, plain band saw, planing machine, vertical spindle moulding machine or chain mortising machine operating on wood;

“circular saw” means a circular saw working in a bench (including a rack bench) for the purpose of ripping, deep-cutting or cross-cutting, but does not include a swing saw or other saw which is moved towards the wood;

“plain band saw” means a band saw, other than a log saw or band re-sawing machine, the cutting portion of which runs in a vertical direction;

“planing machine” includes a machine for overhand planing or for thicknessing or for both operations.

Application  
of parts I  
and II.

3. (1) It shall be the duty of the owner to observe Part I of these rules.

(2) It shall be the duty of all persons employed to observe Part II of these rules.

### PART I.—DUTIES OF OWNER.

Stopping  
and  
starting  
appliances.

4. Every woodworking machine shall be provided with an efficient stopping and starting appliance, and the control of this appliance shall be in such a position as to be readily and conveniently operated by the person in charge of the machine:

Provided that an Inspector may if he considers it necessary in the interest of safety order that the machine shall be fitted with more than one control.

Clear  
space.

5. Sufficient clear and unobstructed space shall be maintained at every woodworking machine while in motion to enable the work to be carried on without unnecessary risk.

Condition  
of floor.

6. The floor surrounding every woodworking machine shall be maintained in good and level condition, and as far as practicable free from chips or other loose material, and shall not be allowed to become slippery.



7. Where the natural light at a woodworking machine is inadequate and can be improved by the provision of additional or better windows not involving serious structural alteration, or by whitening the walls or tops of the factory, or by any other reasonable means, the owner shall take steps as aforesaid to improve the natural light at the said machine. Light.

8. The means of artificial lighting for every woodworking machine shall be adequate, and shall be so placed or shaded as to prevent direct rays of light from impinging on the eyes of the operator while he is operating such machine. Artificial light.

9. (1) No person shall be employed at a woodworking machine unless he has been sufficiently trained to work that class of machine or unless he works under the adequate supervision of a person who has a thorough knowledge of the working of the machine. Training or supervision.

(2) Every person while being trained to work a wood-working machine shall be fully and carefully instructed as to the dangers arising in connection with such machine and the precautions to be observed.

10. Every circular saw shall be fenced as follows:—

Circular saws

(a) The part of the saw below the bench table shall be protected by two plates of metal or other suitable material, one on each side of the saw; such plates shall not be more than six inches apart, and shall extend from the axis of the saw outwards to a distance of not less than two inches beyond the teeth of the saw.

(b) Behind and in a direct line with the saw there shall be a riving knife, which shall have a smooth surface, shall be strong, rigid, and easily adjustable, and shall also conform to the following conditions:—

(i) The edge of the knife nearer the saw shall form an arc of a circle having a radius not exceeding the radius of the largest saw used on the bench.

(ii) The knife shall be maintained as close as practicable to the saw, having regard to the nature of the work being done at the time, and at the level of the bench table the distance between the front edge of the knife and teeth of the saw shall not exceed half an inch.

(iii) For a saw of a diameter of less than twenty-four inches, the knife shall extend upwards from the bench table to within one inch of the top of the saw, and for a

saw of a diameter of twenty-four inches or over shall extend upwards from the bench table to a height of at least nine inches or at least the depth of the cut in the timber being sawn.

(c) The top of the saw shall be covered by a strong and easily adjustable guard, with a flange at the side of the saw farthest from the fence. The guard shall be kept so adjusted that the said flange shall extend below the roots of the teeth of the saw. The guard shall extend from the top of the driving knife to a point as low as practicable at the cutting edge of the saw.

Push-sticks.

11. A suitable push-stick shall be kept available for use at the bench of every circular saw which is fed by hand, to enable the work to be carried on without unnecessary risk.

Plain  
band saws.

12. Every plain band saw shall be guarded as follows:—

(a) Both sides of the bottom pulley shall be completely encased by sheet metal or other suitable material.

(b) The front of the top pulley shall be covered with sheet metal or other suitable material.

(c) All portions of the blade shall be enclosed or otherwise securely guarded, except the portion of the blade between the bench table and the top guide.

Planing.

13. Every planing machine used for overhand planing shall be provided with a "bridge" guard capable of covering the full length and breadth of the cutting slot in the bench, and so constructed as to be easily adjusted both in a vertical and horizontal direction.

Feed rollers.

14. The feed roller of every planing machine used for thick-nessing, except the combined machine for overhand planing and thicknessing, shall be provided with an efficient guard.

Cutters.

15. The cutter of every vertical spindle moulding machine shall when practicable be provided with the most efficient guard having regard to the nature of the work which is being performed.

When  
efficient  
guard not  
practicable.

16. For such work as cannot be performed with an efficient guard for the cutter, the wood being moulded at a vertical spindle moulding machine, shall, if practicable, be held in a jig or holder of such construction as to reduce as far as possible the risk of accident to the worker.

**17.** A suitable "spike" or push-stick shall be kept available for use at the bench of every vertical spindle moulding machine. Push-sticks.

**18.** The chain of every chain mortising machine shall be provided with a guard which shall enclose the cutters as far as practicable. Chains.

**19.** Generally all reasonable precautions to prevent accidents shall be taken by the fencing of and the provision of efficient guards on all woodworking machinery and the guards and other appliances required by these rules shall be maintained in an efficient state and shall be constantly kept in position while the machinery is in motion, except when, owing to the nature of the work being done, the use of the guards or appliances is rendered impracticable. The guards shall be so adjusted as to enable the work to be carried on without unnecessary risk. General.

**20.** Rules, 10, 12, 13 and 14 shall not apply to any woodworking machine in respect of which it can be shown that other safeguards are provided and maintained which render the machine as safe as it would be if guarded in the manner prescribed by these rules. Certain rules may not apply.

## PART II.—DUTIES OF PERSONS EMPLOYED.

**21.** Every person employed on a woodworking machine shall— Duty of Employees.

(a) use and maintain in proper adjustment the guards provided in accordance with these rules;

(b) use the "spikes" or push-sticks and holders provided in compliance with rules 11, 16 and 17,

except when, owing to the nature of the work being done, the use of the guards or appliances is rendered impracticable.

## PART III.—OFFENCES AND PENALTIES.

**22.** Any person who shall— Penalty.

(a) contravene any provision of these rules, or

(b) use, cause or permit to be used any machinery which does not comply with any provision of these rules relating to such machinery, or

(c) fail to comply with any instruction or requirement issued under these rules,

shall be guilty of an offence and shall, on summary conviction, be liable to a fine not exceeding fifty pounds, or to imprisonment

for a term not exceeding six months, or to both such fine and imprisonment.

P.N.  
56 of 1957.

## MACHINERY (SAFE WORKING AND INSPECTION) FEES FOR BOILER TESTING RULES

*made by the Governor in Council under section 15.*

Citation.

1. These rules may be cited as the Machinery (Safe Working and Inspection) (Fees for Boiler Testing) Rules.

Scale of fees  
for boiler  
testing.

2. Fees for the testing by Inspectors of boilers and other similar plant shall be in accordance with the scale set out in the Schedule hereto.

Re-imburse-  
ment of  
expenses.

3. In addition to the fees prescribed in the Schedule hereto, owners of the plant tested shall be liable to reimburse any travelling expenses incurred by the Inspector, and the cost of any special labour and equipment required for the purposes of the testing which is not supplied by the owners of the plant tested.

Moiety of  
fees to  
inspectors.

4. The fees prescribed in the Schedule hereto shall be paid into general revenue, but a portion of the fees received, not exceeding one-half, may be paid out of general revenue to the Inspector who performed the service for which the fees are received.

### SCHEDULE.

1. Locomotive boilers designed for superheated steam and water tube boilers	...	...	...	£	s.	d.
				10	0	0
2. Locomotive boilers designed for saturated steam and fixed vertical boilers designed to work at 100 lb. pressure and over	...	...	...	7	10	0
3. Fixed vertical boilers designed to work at under 100 lb. pressure	...	...	...	5	0	0
4. Portable boilers designed to work at under 100 lb. pressure	...	...	...	4	0	0
5. For any boiler, air receiver, gas cylinder or inter-cooler which does not fall within the above categories	...	...	...	£1 per vessel with a maximum of £5 per day at work.		