NR 7 - OCCUPATIONAL HEALTH CONTROL PROGRAM

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7.1 OBJECTIVE

7.1.1 This Regulatory Norm – 'NR' - establishes the obligation to elaborate and implement an Occupational Health Control Program – '**PCMSO' –** for all employers and institutions that hire workers as employees, with the objective of promoting and preserving the health of all their employees.

7.1.2 This NR establishes the minimum standards and guidelines to be followed in implementing the PCMSO, which may be extended by means of a collective bargaining agreement.

7.1.3 It is due to the contracting enterprise to inform the contracted enterprise about the existing risks factors and assist in the elaboration and implementation of the PCMSO in the workplaces, where the services are being provided. *(Amended by Ordinance no. 8 of May 5th, 1996)*

7.2 GUIDELINES

7.2.1 The PCMSO is part of a broader set of the enterprise's initiatives in the

field of workers' health and shall be articulated with the provisions of other NRs.

7.2.2 The PCMSO shall consider individual and collective health issues, favoring the clinic-epidemiological methods in approaching the relationship between workers' health and their job.

7.2.3 The PCMSO shall be a preventive program, with screening and early diagnosis of work-related health problems, including those in sub-clinical state, in addition to identifying cases of occupational diseases or irreversible damages to workers' health.

7.2.4 The PCMSO shall be planned and implemented based on the health risks of workers, particularly those identified in the evaluations of other NRs.

7.3 RESPONSIBILITIES

7.3.1 It is the employer's responsibility to:

a) ensure the development and the effective implementation of PCMSO, as well as its effectiveness;

b) bear the cost of all procedures related to PCMSO without charge to the employees;

(Amended by Ordinance no. 8 of May 5th, 1996)

c) appoint a coordinator responsible for the execution of the PCMSO among the doctors of the Specialized Services in Occupational Safety and Health (SESMT);

d) if the enterprise is not obliged to hire an occupational physician according to NR-04, the employer shall appoint an occupational physician, who may or may not be employed by the enterprise, to coordinate the PCMSO.

e) in the absence of an occupational physician in the region where the enterprise operates, the employer may hire a doctor of other specialties to coordinate the PCMSO.

7.3.1.1 The enterprises in risk level 1 and 2, according to Table 1 in NR-04, with up to 25 (twenty-five) employees, and those in risk level 3 and 4, according to Table 1 in NR-04, with up to 10 (ten) employees, are not obliged to appoint a medical coordinator. *(Amended by Ordinance no. 8 of May 5th, 1996)*

7.3.1.1.1 The enterprises in risk level 1 or 2, according to Table I in NR4, with 25 (twenty five) to 50 (fifty) employees, may be exempted from appointing a medical coordinator as a result of collective bargaining. *(Amended by Ordinance no. 8 of May 5th, 1996)*

7.3.1.1.2 The enterprises in risk level 3 or 4, according to Table I in NR4, with 10 (ten) to 20 (twenty) employees, may be exempted from appointing a medical coordinator as a result of collective bargaining, assisted by a professional of the regional agency responsible for occupational safety and health. *(Amended by Ordinance no. 8 of May 5th, 1996)*

7.3.1.1.3 Through a determination by the Regional Labor Delegate, based on conclusive technical avaliation of the regional authority responsible for occupational safety and health, or as a result of collective bargaining, the enterprises specified in item 7.3.1.1 and earlier sub-items may have the obligation to appoint a medical coordinator when working conditions pose potential serious risk to the workers. *(Amended by Ordinance no. 8 of May 5th, 1996)*

7.3.2 It is the responsibility of the medical coordinator to:

a) conduct medical examinations that are referred to in item 7.4.1 or delegate them to a medical practitioner familiar with the principles of occupational pathology and its causes, as well as the environment, working conditions and risk factors to which each employee of the enterprise is or will be exposed;

b) delegate to professionals and/ or entities, properly trained, equipped and qualified, to carry on the complementary examinations that are provided for in the items, tables and annexes of this NR.

7.4 THE PCMSO'S DEVELOPMENT

7.4.1 The PCMSO shall include, among others, mandatory medical examinations:

a) upon hiring;
b) periodically;
c) on return to work;
d) upon a change in job position;
e) upon dismissal.

7.4.2 The examinations mentioned in item 7.4.1 include:

a) clinical evaluation, including occupational history and physical and mental examination;

b) additional exams conducted in accordance with the specific terms within this NR and its annexes.

7.4.2.1 For workers whose activities involve the risk factors detailed in Ta-

bles I and II of this NR, complementary medical exams shall be performed and interpreted based on the criteria contained within these tables and annexes. The periodical evaluation of the biological indicators in Table I shall be done at least every six months, which may be reduced at the discretion of the medical coordinator or by notification from the doctor of labour inspection, or upon collective bargaining.

7.4.2.2 For workers who are exposed to chemical agents that are not shown in Table I and II, other biological indicators may be monitored, depending on prior study on the aspects of toxicological validity, analytic and the interpretation of these indicators.

7.4.2.3 Other complementary examinations commonly used in clinical pathology to assess the function of organs and organ systems may be performed at the discretion of the medical coordinator or by notification from the doctor of labour inspection, or upon collective bargaining.

7.4.3 The clinical evaluation referred to in item 7.4.2, subsection "a", as part of the medical examination listed in item 7.4.1, shall obey the deadlines and periodicity as provided in the sub-items listed below:

7.4.3.1 For the medical examination upon hiring, it shall be conducted before the worker initiates his activities;

7.4.3.2 For the periodic medical examination, it shall be conducted in accordance with the minimum time intervals shown below:

a) for workers exposed to risk factors or work situations that involve the onset or worsening of occupational disease, or even for those who are suffering from chronic diseases, the examinations shall be repeated:

a.1) every year or at shorter intervals at the discretion of the doctor in charge, or if notified by the doctor of labour inspection, or as a result of collective bargaining;

a.2) for workers exposed to hyperbaric conditions in accordance with the frequency specified in Annex 6 of NR 15;

b) for other workers:

b.1) annually, for those who are younger than 18 (eighteen) years and older than 45 (forty five) years of age;

b.2) every two years, for workers between 18 (eighteen) years and 45 (forty five) years of age.

7.4.3.3 For the medical examination on return to work, it shall be conducted, obligatorily, at the first day back to the job in case of a worker away

for a period equal to or exceeding 30 (thirty) days, due to any accident or disease, related to work or not, or childbirth.

7.4.3.4 For the medical examination upon a change in job position, it shall be conducted before the date that the change takes place.

7.4.3.4.1 For purposes of this NR, it is considered a change in job position any and all change in activity, job or sector position that involve risk factors that are different from those the worker had been exposed to before the change.

7.4.3.5 For the medical examination upon dismissal, it shall be conducted until the date of the approval of the dismissal, provided that the last occupational medical examination has been conducted for more than:
(Amended by Ordinance no. 8 of May 5th, 1996)

- 135 (one hundred and thirty five) days for enterprises in risk level 1 and 2, according to Table I in NR-4;
- 90 (ninety) days for the enterprises in risk level 3 and 4, according to Table I in NR-4.

7.4.3.5.1 Enterprises classified in risk level 1 or 2, according to Table I of NR 4, may extend the exempt period of the dismissal examination by up to 135 (one hundred and thirty-five) days more as a result of collective bargaining, assisted by a professional appointed through a mutual agreement between the parties or by a professional from the regional agency responsible for occupational safety and health. *(Amended by Ordinance no. 8 of May 5th, 1996)*

7.4.3.5.2 The enterprises classified in risk level 3 or 4, according to Table I of NR4, may extend the exempt period of the dismissal examination by up to 90 (ninety) days more as a result of collective bargaining assisted by a professional indicated through a mutual agreement between the parties or by a professional from the regional agency responsible for occupational safety and health. *(Amended by Ordinance no. 8 of May 5th, 1996)*

7.4.3.5.3 As determined by the Regional Labour Delegate, based on conclusive technical opinion of the regional authority responsible for occupational safety and health, or as a result of collective bargaining, the enterprises may have the obligation to conduct a dismissal examination regardless of the time of performing any other medical examination, when their conditions represent potential serious risk to the workers. *(Amended by Ordinance no. 8 of May 5th, 1996)*

7.4.4 For each medical examination conducted as provided for in item 7.4.1, the doctor shall issue 2 (two) copies of an Occupational Health Certificate – 'ASO'.

7.4.4.1 The first copy of the ASO shall be archived at the workplace, including work front or construction site, at the disposal of labour inspection.

7.4.4.2 The second copy of the ASO shall be delivered to the worker upon receipt on the first copy.

7.4.4.3 The ASO shall contain, at the minimum: *(Amended by Ordinance no. 8 of May 5th, 1996)*

a) full name of the worker, his identification registration number and his job position;
b) the existing specific occupational hazards, or the absence thereof, in the employee's activity according to the technical instructions issued by the Secretariat of Occupational Safety and Health (SSST);
c) indication of medical procedures to which the worker has undergone, including complementary examinations and the date they were conducted;
d) name of the coordinating doctor, if any, with the respective doctor's registration number 'CRM';
e) definition of whether the employee is fit or unfit for the specific function that he will exercise, exercises now or exercised;
f) name of the doctor in charge of the examination and his address or contact information;
g) date and signature of the doctor in charge of the examination and a stamp containing the doctor's registration number in the Regional Council of Medicine.

7.4.5 The data obtained in medical examinations, including those obtained from clinical evaluation and complementary examinations, the conclusions and the implemented measures shall be registered in the individual clinical record, which shall be the responsibility of the medical coordinator of PCMSO.

7.4.5.1 The records referred to in item 7.4.5 shall be maintained for a minimum of 20 (twenty) years after the dismissal of the worker.

7.4.5.2 If there is a replacement of the doctor referred to in the item 7.4.5, the files shall be transferred to his successor.

7.4.6 The PCMSO shall comply with a schedule with programmed health-care actions to be performed during the year, which shall be object of an annual report.

7.4.6.1 The annual report shall state, according to the enterprise's sectors, the number and nature of medical examinations, including clinical and complementary examinations, any statistical results considered abnormal, as well as planning for next year, based on the model proposed in Table III of this NR.

7.4.6.2 The annual report shall be presented and discussed in the Internal Comission to Prevention of Accidents - 'CIPA', when existent at the enterprise, in accordance with NR 5, and a copy shall be attached to the minutes book of that Comission.

7.4.6.3 The PCMSO annual report may be stored as a computerized file, provided it is maintained as to provide immediate access to the labour inspection agent.

7.4.6.4 Enterprises that are not obligated to appoint a coordinating doctor are exempted from preparing the annual report. *(Amended by Ordinance no. 8 of May 5th, 1996)*

7.4.7 If the worker's clinical evaluation and/ or the examinations in Table I of this NR show only the excessive exposure ('EE' or 'SC+') to the risk, even if there is no clinical signs or symptoms, the worker shall be removed from the workplace or from the risk until the biological exposure indicator has been normalized and the control measures at the workplace have been adopted.

7.4.8 If an occurrence or worsening of occupational disease is found through medical examinations including those defined in this NR; or alterations that reveal any kind of dysfunction of an organ or biological system are verified through the examinations shown in Tables I (only those with interpretation SC) and II, and in item 7.4.2.3 of this NR, even without symptomatology, it will be the responsibility of the medical coordinator or designee to:

a) request from the enterprise to issue a Communication of Occupational Accident ('CAT');
b) indicate, when necessary, the worker's withdrawal from the risk factor exposure, or from the work;
c) refer the employee to Social Security to establish a causal nexus, disability assessment and definition of social security procedures in relation to work;

d) guide the employer regarding the need to adopt control measures at the workplace.

7.5 FIRST AID

7.5.1 Every establishment shall be equipped with materials necessary for providing first aid, considering the characteristics of the activity performed; and this material shall be kept stored in a suitable place under the care of people trained for this purpose.

(Approved by SSST Ordinance no. 24 of December 29th, 1994)

TABLE I
Parameters for the Biological Control of Occupational Exposure to Some Chemical Agents

Chemical Agent	Biological Indicator		VR	IBMP	Analytical Method.	Sampling	Interpretation	Duration
	Bio. Mat.	Analyses						
Aniline	Urine Blood	P-aminophenol and/or methaemoglobin	Up to 2%	50mg/g creat. 5%	CG E	FJ FJ0-1	EE SC+	
Arsenic	Urine	Arsenic	up to 10ug/g creat.	50u/g creat.	E or EAA	FS+T-6	EE	
Cadmium	Urine	Cadmium	up to 2 ug/g creat.	5u/g creat.	EAA	NC T-6	SC	
Inorganic Lead	Blood Urine	Lead and Ac. delta amino levulinic or Zincoprotoporphyrin	Up to 40ug/100 ml Up to 4.5 mg/g creat. Up to 40ug/100 ml	60ug/100 ml 10mg/g creat. 100ug/100 ml	EAA E HF	NC T-1 NC T-1 NC T-1	SC SC SC	
Tetraethyl Lead	Urine	Lead	up to 50 ug/g creat.	100u/g creat.	EA A	FJ 0-1	EE	
Hexavalent Chro-mium	Urine	Chromium	up to 5 ug/g creat.	30u/g creat.	EA A	FS	EE	
Dichloromethane	Blood	Carboxyhemoglobin	up to 1% NF	3.5% NF	E	FJ 0-1	SC+	
Dimethylformamide	Urine	N-Methylformamide		40mg/g creat.	CG or CLAD	FJ	EE	P-18
Carbon Disulfide	Urine	Ac. 2-Thio-Thiazolidine		5mg/g creat.	CG or CLAD	FJ	EE	P-24
Organophosphorus and Carbamate Esters	Blood	Erythrocyte Acetyl Cholinesterase or Cholinesterase Plasma or Choli-nesterase Erythro-cyte and Plasma (Total Blood)	Determine preoccupational activity	30% of initial activity		NC	SC	
				depression 50% of initial activity		NC	SC	
				depression 25% of initial activity depression		NC	SC	

Styrene	Urine Urine	Ac. Mandelic and/or Ac. Phenyl-Glyoxylic		0.8g/g creat. 240mg/g creat.	CG or CLAD CG or CLAD	FJ FJ	EE EE	
Ethylbenzene	Urine	AC. Mandelic		1.5g/g creat	CG or CLAD	FS	EE	
Phenol	Urine	Phenol	20m/g creat.	250 mg/g creat.	CG or CLAD	FJ 0-1	EE	
Fluorine and Fluo-rides	Urine	Floride	up to 0.5mg/g	3mg/g creat. at the begin-ning of the workday and 10mg/g creat. at the end of the word-day	IS	PP+	EE	
Inorganic Mercury	Urine	Mercury	up to 5ug/g creat.	3.5ug/g creat.	EA A	PU T-12 12	EE	
Methanol	Urine	Methanol	up to 5mg/1	15mg/g	CG	FJ 0-1	EE	
Methyl-ethyl-ketone	Urine	Methyl-ethyl-ketone		2mg/1	CG	FJ	EE	
Carbon monoxide	Blood	Carboxyhemoglobin	up to 1% NF	3.5 NF	E	FJ 0-1	SC+	
N-Hexane	Urine	2.5-Hexanedione		5mg/g creat.	CG	FJ	EE	P-18
Nitrobenzene	Blood	Methemoglobin	up to 2%	5%	E	FJ 0-1	SC+	
Pentachlorophenol	Urine	Pentachlorophenol		2mg/g creat.	CG or CLAD	FS+	EE	
Tetrachlorethylene	Urine	Ac. Trichloroacetic		3.5mg/1	E	FS+	EE	
Toluene	Urine	Ac. Hippuric	up to 1.5g/g creat.	2.5g/g creat.	CG or CLAD	FJ-1	EE	
Trichloroethane	Urine	Trichlorocompounds Totals		40mg/g creat.	E	FS	EE	
Trichlorethylene	Urine	Trichlorocompounds Totals		300mg/g creat.	E	FS	EE	
Xylene	Urine	Ac. Methyl-Hippuric		1.5g/g creat.	CG or CLD	FJ	EE	

ANNEX of TABLE I

(Approved by SSST Ordinance no. 24 of December 29th, 1994)

ABBREVIATIONS

IBMP
Maximum Allowable Biological Index: the maximum value of the biological indicator for which the assumption is that the majority of occupationally exposed persons are at no risk for health hazards. Exceeding this value means excessive exposure;

VR

Normality Reference Value: a possible value to be found in occupationally non-exposed populations;

NF
Non-smokers.

RECOMMENDED ANALYTICAL METHOD

E
Ultraviolet/Visible Spectrophotometry;

EAA
Atomic Absorption Spectrophotometry;

CG
Gas Phase Chromatography;

CLAD
High Performance Liquid Chromatography;

IS
Selective Ion Electrode;

HF
Hematofluorometer.

SAMPLING CONDITIONS

FJ
End of the last work day (recommendation to avoid the first work day of the week);

FS
End of last work day of the week;

FS+
Beginning of the last work day of the week;

PP+,
Pre and post 4th work day of the week;

PU
First urine in the morning;

NC
"Non-critical" sampling time: may be done on any day and time, as long as the worker has been continuously working over the last 4 (four) weeks without a leave of absence greater than 4 (four) days;

T-1
Recommendation to start monitoring after 1 (one) month of exposure;

T-6
Recommendation to start monitoring after 6 (six) months of exposure;

T-12
Recommendation to start monitoring after 12 (twelve) months of exposure;

0-1
The difference between pre- and post-workday may be made.

INTERPRETATION

EE
The biological indicator is able to suggest an environmental exposure above the tolerance limit, but does not have clinical or toxicological significance by itself, that is, it does not indicate disease, nor is it associated with an effect or dysfunction of any biological system;

SC
In addition to showing excessive exposure, the biological indicator also has its own clinical or toxicological meaning, that is, it may indicate disease, be associated with an effect or a dysfunction of an evaluated biological system;

SC +
The biological indicator has its own clinical or toxicological significance but, in practice, due to its short biological half-life, should be considered EE.

DURATION

P-12
The labour inspection will require the evaluation of this biological indicator 12 (twelve) months after this norm is published;

P-18
The labour inspection will require the evaluation of this biological indicator 18 (eighteen) months after this norm is published;

The labour inspection will require the evaluation of this biological indicator 24 (twenty four) months after this norm is published.

RECOMMENDATION

Recommendation to perform biological monitoring in the collective approach, that is, monitoring the results of the group of workers exposed to quantitatively similar risks.

TABLE II

(Amended by SIT Ordinance no. 223 of May 6th, 2011)

PARAMETERS FOR MONITORING OCCUPATIONAL EXPOSURE TO SOME HEALTH RISKS

Risk	Complementary Exam	Frequency	Execution Method	Interpretation critieria	Notes
Noise	See Annex I of Table II				
Aerodispersoids FIBROGENIC	Chest teleradiography Spirometry	at admission and annually at admission and annually	See Annex II of Table II Technique recommended by the American Thoracic Society, 1987	International Classification of OIT for Radiography	
Aerodispersoids NON-FIBROGENIC	Chest teleradiography Spirometry	admissional and triennial if exposed for 15 yrs admissional and triennial if exposed > 15 yrs at admission and annually	See Annex II of Table II Technique recommended by the American Thoracic Society, 1987	International Classification of OIT for Radiography	
Hyperbaric Conditions	Radiographs of hip-femoral and scapulo-umeral joints	at admission and annually			See Annex "B" of Annex nº6 from NR-15
Ionizing radiation	Complete blood count and platelet count	at admission and semestraly			
Female Sexual Hormones	Only in men: Total testosterone or LH and FSH plasma free	at admission and semestraly			
Benzene	Complete blood count and platelets	at admission and semestraly			

ANNEX I of TABLE II

(Included by Ordinance no. 19 of April 9th, 1998)

GUIDELINES AND MINIMUM PARAMETERS FOR THE EVALUATION AND MONITORING OF HEARING IN WORKERS EXPOSED TO HIGH SOUND PRESSURE LEVELS

1. Objectives

1.1. To establish minimum guidelines and parameters for evaluating and following-up on worker's hearing through the performance of reference and sequential audiological exams.

1.2. To provide subsidies in adopting programs aimed at the prevention of hearing loss caused by high sound pressure levels and in conservation of workers' auditory health.

2. Definitions and Characterization

2.1. Auditory loss due to high sound pressure levels is understood to be the alteration of the auditory thresholds of the sensorineural kind, due to systematic exposure to high sound pressure levels on the job. Its primary characteristics are the irreversibility and the gradual progression over time of exposure to risk. Its natural history initially shows the involvement of auditory thresholds in one or more frequencies in the range of 3,000 to 6,000 Hz. Higher and lower frequencies may take longer to be affected. Once exposure has ceased, there will be no progression of hearing loss.

2.2. Reference and sequential audiological tests are understood to be the set of procedures required to evaluate the worker's hearing over the time of exposure to the risk, including:

a. clinical-occupational anamnesis;
b. otological examination;
c. audiometric examination performed according to the terms provided for in this technical standard.
d. other complementary audiological examinations requested at a doctor's discretion.

3. Basic principles and Procedures for conducting audiometric exams

3.1. All workers who perform or will perform their activities in environments whose sound pressure levels exceed the limits of tolerance established in annexes 1 and 2 of NR 15 of Ordinance 3.214 from the Ministry of Labour, regardless of the use of hearing protectors, shall undergo audiometric refer-

ence and sequential exams.

3.2. The audiometer will be subjected to procedures for periodic verification and control of their functioning.

3.2.1. Annual acoustic assessment.

3.2.2. Acoustic calibration whenever the acoustic measurement indicates changes and, compulsorily, every 5 years.

3.2.3. A biological assessment is recommended preceding audiometric exams. In case of alteration, the equipment is to be subjected to an acoustic measurement.

3.2.4. The procedures in items 3.2.1 and 3.2.2 shall follow the recommendations from ISO 8253-1, and the results shall be included in an assessment and/or calibration certificate that will accompany the equipment.

3.3. The audiometric test will be conducted by a qualified professional, i.e. a doctor or speech therapist, according to the norms of the respective professional federal councils.

3.4. Frequency of audiometric tests.

3.4.1. The audiometric examination will be conducted, at a minimum, at the time of admission to the job, on the 6th (sixth) month after this, annually thereafter, and on dismissal.

3.4.1.1. At the time of dismissal, in the same manner as provided for in the clinical evaluation in item 7.4.3.5 of NR-7, the results of audiometric are to be conducted up to:

a) 135 (one hundred and thirty-five) days retroactive to the date of the medical examination at dismissal of a employee of a enterprise classified in risk grade 1 or 2;
b) 90 (ninety) days retroactive in relation to the date of the medical examination at dismissal of a employee of a enterprise classified in risk grade 3 or 4;

3.4.2. The interval between audiometric examinations may be reduced at the discretion of the coordinating physician of the PCMSO, or by notification of a Labour Inspection physician, or through collective bargaining.

3.5. The results of the audiometric examination shall be recorded on a form

containing, at the minimum:
a) name, age and worker's identity number;
b) the name of the enterprise and the employee's job;
c) auditive rest time before audiometric examination;
d) name of the manufacturer, model and date of the last acoustic check of the audiometer;
e) audiometric trace and symbols in accordance to the model in Annex 1;
f) name, registration number in the regional council and signature of the professional responsible for the audiometric examination.

3.6. Types of audiometric tests.
The worker shall undergo a reference audiometric examination and a sequential audiometric examination as described below:

3.6.1. Reference audiometric test, test with which the sequential ones will be compared and whose guidelines are included in the subitems below, shall be performed:

a) when a previous reference audiometric result is not available:
b) when any sequential audiometric examination shows a significant change in relation to the reference, as described in items 4.2.1, 4.2.2 and 4.2.3 of this technical norm.

3.6.1.1. The audiometric exam will be performed in an audiometric booth, with the sound pressure levels not to exceed the maximum permitted levels, according to ISO 8253.1.

3.6.1.1.1. In enterprises where there is an acoustically treated environment that complies with ISO 8253.1, the audiometric booth may be dispensed.

3.6.1.2. The worker will remain at auditory rest for a minimum period of 14 hours before the audiometric examination.

3.6.1.3. The person responsible for conducting the audiometric exam will inspect the external acoustic meatus of both ears and record the findings on the registration form. If any abnormalities are identified, it will be submitted to the doctor in charge.

3.6.1.4. Types of tests, sound frequencies and other complementary exams.

3.6.1.4.1. The audiometric test will always be performed through air conduction at sound frequencies of 500, 1,000, 2,000, 3,000, 4,000, 6,000 and 8,000 Hz.

3.6.1.4.2. In case an alteration in the exam is detected by means of the air conduction test or according to an evaluation of the professional responsible for the execution of the examination, the test will be done also through bone conduction in the frequencies of 500, 1,000, 2,000, 3,000 and 4,000 Hz.

3.6.1.4.3. According to the evaluation by the professional responsible, at the time of the examination, speech recognition thresholds (LRF) may be determined.

3.6.2. A sequential audiometric test, one that will be compared with the baseline reference, applies to all workers who already have a previous baseline audiometric test, according to the model provided in item 3.6.1. The following minimum guidelines shall be followed:

3.6.2.1. If it is not possible to conduct an audiometric test under the conditions set forth in item 3.6.1.1, the person responsible for performing the exam will evaluate the feasibility of performing the test in a quiet environment, through an audiometric examination in 2 (two) individuals whose auditory thresholds, detected in updated reference audiometric exams, are known. Auditory threshold difference, at any frequency and in any of the 2 (two) individuals examined, above 5 dB(HL) (hearing level in decibel) makes conducting the examination at the chosen location impossible.

3.6.2.2. The person responsible for the audiometric exam will inspect the external acoustic meatus of both ears and record the findings on the record sheet.

3.6.2.3. The audiometric test will be done through air conduction in frequencies of 500, 1,000, 2,000, 3,000, 4,000, 6,000 and 8,000 Hz.

4. Interpretation of the audiometric test results for prevention purposes

4.1. The interpretation of the baseline reference audiometric examination results shall follow the following parameters:

4.1.1. For the purposes of this preventive technical standard, are considered within the acceptable limits the cases whose audiograms show auditory thresholds less than or equal to 25 dB(HL) in all frequencies examined.

4.1.2. Cases where audiograms present auditory thresholds above 25 dB(HL) at the frequencies of 3,000 and/or 4,000 and/or 6,000 Hz and higher than the other frequencies, whether they are compromised or not, both in the air conduction test and in the bone conduction test, on one or both

sides, are considered suggestive of hearing loss induced by high sound pressure levels.

4.1.3. Cases where audiograms do not fall within the descriptions contained in items 4.1.1 and 4.1.2 above are not considered suggestive of hearing loss induced by high sound pressure levels.

4.2. The interpretation of the results of the sequential audiometric examination shall follow the following parameters:

4.2.1. Cases in which the auditory thresholds in all frequencies tested in the reference and sequential audiometric tests remain lower than or equal to 25 dB(HL) but the comparison of the sequential audiogram with the reference test demonstrates an evolution within the pattern defined in item 2.1 of this standard, and fulfils one of the criteria below, are considered to be suggestive of triggering of a hearing loss induced by high sound pressure levels:

a) the difference between the arithmetic means of the auditory limits in the 3,000, 4,000 and 6,000 HZ frequency groups equal to or is above 10dB(HL);
b) worsening in at least one of the 3,000, 4,000 and 6,000 HZ frequencies equal or above 15 dB (HL).

4.2.2. Cases in which only the reference audiometric test presents auditory thresholds in all tested frequencies less than or equal to 25 dB(HL) and the comparison of the sequential audiogram with the reference test shows an evolution within the pattern defined in item 2.1 of this norm, and fulfils one of the criteria below, are also considered suggestive of triggering hearing loss induced by high sound pressure levels:

a) the difference between the arithmetic mean of the auditory limits in the 3,000, 4,000 and 6,000 Hz frequency groups equal to or are above 10dB(HL);
b) worsening in at least one of the 3,000, 4,000 and 6,000 Hz frequencies equal to or above 15 dB (HL).

4.2.3. The cases that have already been confirmed through a reference audiometric test, according to item 4.1.2., and in which the comparison of the sequential audiometric examination shows an evolution within the pattern defined in item 2.1 of this standard, and fulfil one of the criteria below, are considered suggestive of worsening of the hearing loss induced by high sound pressure levels:

a) the difference between the arithmetic mean of the auditory limits in

the 3,000, 4,000 and 6,000 Hz frequency groups or in the 3,000, 4,000 and 6,000 Hz frequency groups equal to or are above 10dB(HL);
b) worsening in an isolated frequency equal to or above 15 dB (HL).

4.2.4. For the purposes of this Technical Norm, the audiometric reference test remains the same until the time in which any of the sequential audiometric tests meet any of the criteria presented in 4.2.1, 4.2.2 or 4.2.3. Once one of these criteria is met, a new audiometric test shall be performed in accordance with the model provided in item 3.6.1 of this technical norm, which will then be the new audiometric reference test. The previous exams become the evolutionary history of the worker's hearing.

5. Diagnosis of hearing loss induced by high sound pressure levels and definition of the ability to work.

5.1 The conclusive diagnosis, the differential diagnosis and the definition of ability to work, if a hearing loss induced by high sound pressure levels is suspected, are the responsibility of the PCMSO coordinating physician from each enterprise or the physician in charge of the PCMSO for conducting a medical examination in the manner prescribed in NR-7, or, in the absence thereof, of the physician assisting the worker

5.2. Hearing loss induced by high sound pressure levels alone is not indicative of inability to work, and in the analysis of each case, in addition to the audiometric tracing or the sequential evolution of audiometric tests, the following factors should be taken into account:

a) the worker's clinical and occupational history;
b) the result of otoscopy and other complementary audiological tests;
c) the worker’s age;
d) the length of time of previous and current exposure to high sound pressure levels;
e) the sound pressure levels to which the worker will be, or have been, exposed to, while performing their job;
f) the auditory demand of the work or function;
g) non-occupational exposure to high sound pressure levels;
h) occupational exposure to other risk agent(s) to the auditory system;
i) non-occupational exposure to other agent(s) that demonstrate a risk to the auditory system;
j) the professional qualification of the worker examined;
k) hearing conservation programs to which the worker has or will have access to.

6. Preventive Measures

6.1. In the presence of a worker whose audiometric benchmark test falls under item 4.1.2, or any of the sequential audiometric tests falls under item 4.2.1 or 4.2.2 or 4.2.3, the PCMSO coordinating physician or the physician defined to conduct that medical examination, shall:

a) define the worker's ability to perform their job, based on the factors highlighted in item 5.2 of this technical standard;
b) include the case in the PCMSO's annual report;
c) participate in the implementation, improvement and control of programs aiming to prevent any progression of hearing loss in the affected worker and others exposed to the risk, taking the provisions of item 9.3.6 of NR-9 into account;
d) make copies of the audiometric tests available to workers.

6.2. In the presence of a worker whose audiometric reference test falls under item 4.1.3, or if any of the sequential audiometric tests fall under items 4.2.1.a., 4.2.1.b, 4.2.2.a, 4.2.2 .b, 4.2.3.a or 4.2.3.b, but whose evolution is outside the pattern defined in item 2.1 of this technical standard, the coordinating physician of the PCMSO or the physician defined to conduct that medical examination, shall:

a) verify the possibility of a simultaneous presence of more than one type of aggression to the auditory system;
b) guide and refer the worker for a specialized evaluation;
c) define the employee's ability to perform their job;
d) participate in the implementation, improvement and control of programs aiming to prevent the progression of hearing loss by the affected worker and others exposed to the risk, taking the provisions of item 9.3.6 of NR-9 into account.
e) make copies of audiometric exams available to workers.

AUDIOMETRIC PLOTTING
RIGHT EAR
Frequency in KHz
(Included by Ordinance no. 19 of April 9th, 1998)

LEVEL OF HEARING IN dB	-10		0,25	0,5	1	2	3	4	6	8
	0									
	10									
	20									
	30									
	40									
	50									
	60									
	70									
	80									
	90									
	100									
	110									
D	120									
	130									
	D									

AUDIOMETRIC PLOTTING
LEFT EAR
Frequency in KHz
(Included by Ordinance no. 19 of April 9th, 1998)

LEVEL OF HEARING IN dB	-10		0,25	0,5	1	2	3	4	6	8
	0									
	10									
	20									
	30									
	40									
	50									
	60									
	70									
	80									
	90									
	100									
	110									
D	120									
	130									
	D									

The distance between each octave of frequency shall correspond to a varia-

tion of 20 dB in the listening level axis (D).

SYMBOLS

(Included by Ordinance no. 19 of April 9th, 1998)

	RIGHT EAR	LEFT EAR
ANSWERS PRESENT Through Air conduction Through Bone Conduction		
ANSWERS PRESENT Through Air conduction Through Bone Conduction		

1. The symbols referring to the aerial conduction path should be connected through continuous lines for the right ear and an interrupted line for the left ear.

2. Bone conduction symbols should not be interconnected.

3. In the case of the use of colors:

a) the red color should be used for the symbols referring to the right ear;
b) the blue color should be used for the symbols referring to the left ear.

ANNEX II of TABLE II

(Included by SIT Ordinance no. 22 of May 6th, 2011)

MINIMUM GUIDELINES AND CONDITIONS FOR CONDUCTING AND INTERPRETING CHEST RADIOGRAPHS

1. Objective

To establish the technical conditions and minimum parameters for conduct-

ing Chest Radiographs to aid in the diagnosis of pneumoconiosis through examinations with quality to facilitate a correct radiological reading, in accordance with the criteria of the International Labour Organization.

2. Professionals involved in chest radiographs

2.1. Technical Supervisor.

A professional that holds a Specialist degree in Radiology and Diagnostic Imaging given by the Brazilian College of Radiology/ Brazilian Medical Association.

2.2. Professionals Involved in the conduction of a radiological examination:

a) One (or more) Radiologists with Specialist degree in Radiology and Diagnostic Imaging;
b) Radiology Technicians registered in the National Council of Radiology Technicians.

3. Legal Requirements for the operation of a Radiology Service

For the operation of a Radiology service, the following legal requirements established by the National Health Surveillance Agency - ANVISA shall be observed:

a) Health Surveillance Permit, specific to Radiology;
b) Constancy Test Report;
c) Radiometric Measurements of the Equipment and the Examination Room;
d) Leakage Radiation Measurements;
e) Individual Dosimeters;
f) Registration in the Regional Council of Medicine specific to Radiology;
g) Registration in the National Register of Health Establishments - CNES.

4. Environmental conditions for radiology services

A radiology service shall have a room with at least 25 square meters, with barium-plaster or lead-coated walls and with lead shielded doors, with working warnings and a red light to signal that an X-ray is active, along with other conditions provided in the Item 32.4 of Regulatory Norm no. 32.

4.1 If Transportable Equipment for Chest Radiographs is used, the following requirements are needed in addition to what is required in item 3 of this annex: *(Included by MTE Ordinance no. 1.892 of December 9th, 2013)*

a) Specific license for operating a transportable X-ray unit. *(Included by MTE Ordinance no. 1.892 of December 9th, 2013)*
b) to be conducted by a legally qualified professional and under the supervision of a technical person as covered in the terms of SVS/MS Ordinance no. 453 of June 1, 1998. *(Included by MTE Ordinance no. 1.892 of December 9th, 2013)*
c) a technical report issued by a legally qualified professional proving that the equipment being used meets the requirements of item 5 in this annex. *(Included by MTE Ordinance no. 1.892 of December 9th, 2013)*

5. Equipment
The equipment used to do a Chest Radiography shall have the following minimum characteristics:

a) High frequency single-phase generator preferably and/or three-phase from 6 to 12 pulses of at least 500 mA;
b) X-ray Tube - 30/50;
c) 3 to 5 mm Aluminum Filter;
d) Fixed Grid with a focal length of 1.5 m;
e) Ratio of 10:1 grid with more than 100 columns;
f) Ratio of 12:1 grid with 100 columns.

6. Radiological Technique
The radiological technique shall observe the following standards:

a) Fine focus (0.6 to 1.2 mm) - 100 mA or 200 mA (High speed tube);
b) Time 0.01 to 0.02 or 0.03 seconds;
c) Constant - 40 or 50 kV.

7. Film Processing (Conventional Radiology)

The film processing shall be done by an Automatic Processor with a waste cleaning system that meets the requirements of the environmental agencies in charge.

8. Film Identification (Conventional Radiology)

In the upper right corner, the films shall include the date of the examination, order number of the service or the patient's medical record, full name of the patient or the initials of the full name.

9. Radiological Reading according to the criteria of the International Labor Organization - ILO. *(Amended by MTE Ordinance no. 1.892 of December 9th,*

2013)

9.1 The radiological reading is descriptive. *(Amended by MTE Ordinance no. 1.892 of December 9th, 2013)*

9.1.1 A pneumoconiosis diagnosis involves the integration of the clinical/occupational history associated with the chest radiography. *(Inserted by SIT Ordinance no. 236 of June 10th, 2011)*

9.1.2 In selected cases, according to clinical criteria, high-resolution computed tomography may be performed. *(Inserted by SIT Ordinance no. 236 of June 10th, 2011)*

9.2 The most recent version of the ILO criteria, the collection of standard radiographs and a specific form for the issuance of the report are mandatory for the interpretation and issuance of radiological examinations reports that comply with the provisions of NR-7. *(Amended by SIT Ordinance no. 236 of June 10th, 2011)*

9.3 The examination report shall be signed by one (or more than one, in case of multiple readings) of the following professionals: *(Amended by MTE Ordinance no. 1.892 of December 9th, 2013)*

a) A Medical Radiologist with a Specialist Degree or specialized registration in the Regional Council of Medicine and with a qualification and/or certification in Radiological Classification of ILO;
b) Doctors of other specialties who hold a degree or are registered as a specialist in the Regional Council of Medicine in Pneumology, Occupational Medicine or Medical Clinic (or one of its sub-specialties) and that have a qualification and/or certification in ILO Radiological Classification

9.3.1 The denomination "Qualified" refers to the Physician who went through training in Radiological Reading through a specific course/ module. *(Amended by MTE Ordinance no. 1.892 of December 9th, 2013)*

9.3.2 The denomination "Certified" refers to a Physician trained and approved in a Radiological Reading proficiency examination. *(Inserted by SIT Ordinance no. 236 of June 10th, 2011)*

9.3.3 If certification is granted by the National Institute for Occupational Safety and Health (NIOSH) examination, the physician also be referred to as "Reader B". *(Inserted by SIT Ordinance no. 236 of June 10th, 2011)*

10. Use of Digital Radiographs

10.1 'CR' or 'DR' types of digital radiology systems may be used to obtain radiological images of the chest for purposes of radiological interpretation by the ILO criteria.

10.2 The physical parameters for obtaining adequate technical quality chest radiographs using digital radiology equipment shall be similar to those of conventional radiology.

10.3 Film identification shall minimally contain the date of the examination, the order number of the patient's service or medical record, the full name of the patient or the initials of the full name.

11. Radiological Interpretation according to ILO criteria using Digital Radiographs

11.1 Images generated in digital radiology systems (CR or DR) and transferred to monitors may only be interpreted with the OIT standards images for radiographs in an attached monitor.

11.2 The monitors used to view the radiographs that are to be read and radiograph standards shall be of diagnostic quality, with a minimum 3 megapixels resolution and a 21" (or 54 cm) diagonal image display.

11.3 Digital images printed on radiological films shall be interpreted with the OIT standard radiographs in printed form, on negatoscopes.

11.4 It is not allowed to read digital radiographs for the purposes of ILO radiological classification under the following conditions:

a) to interpret radiographs in monitors and comparing them to the standard radiographs in negatoscopes, or the reverse;
b) interpret digital radiographs printed on radiological films with reductions smaller than 2/3 of the original size;
c) to interpret digital radiographs printed on photographic paper;
d) to interpret images originated in the conventional radiographs system and that were digitalized using a scanner and, later, printed or displayed on screen.

12. Ethics and Security in the storage of digital images

12.1 Services offering digital radiology shall ensure the confidentiality of the electronic and data files of workers submitted to admission, periodical and

out-of-hospital chest radiographs for the purpose of ILO radiological classification by means of implementing appropriate technical and administrative measures and procedures.

12.2 Digital images shall be stored in the DICOM format.

12.3 The time for keeping radiological examinations shall comply with the text within NR-7.

12.4 Storing and/or archiving films obtained by the conventional radiology method in the form of scanned images is not permitted.

(Approved by SSST Ordinance no. 24 of December 29th, 1994)

TABLE III
OCCUPATIONAL HEALTH CARE CONTROL PROGRAM
ANNUAL REPORT

Official:	Date: Signature:

Sector	Nature of the Exam	Avg. Annual no. of Exams Conducted	No. of Abnormal Results	No. of Abnormal Results x100 / Annual no. of Exams	No. of Exams for the following year