

Romanian National Research and Development Institute for Labour Protection has elaborated a study concerning mental stress risks in subterranean power distribution lines activity.

Analysis of subterranean power distribution lines activity

The subterranean power distribution lines activity consists in maintenance and repair tasks (technical revision tasks, programmed and accidental repairs) on subterranean power distribution lines.

All the activities are undertaken in open areas.

Psychological and psychophysiological analysis of the activity

The activity aims at keeping the distribution lines operational, in between functional parameters.

This activity consists of two different tasks groups: identification and repair of above and under the ground damaged elements.

The subterranean power distribution lines activity requires visual strains like static and dynamic visual acuity, visual accommodation, chromatic sense and adjustment and relief vision functions. These strains are amplified by a deficit in lighting conditions and/or the operators' visual diseases.

Hearing strains are also enhanced by under the ground work assignments resulting from acoustic signals and verbal communications. The existence of a work specific coded language also pre-supposes certain adjustments when receiving or sending messages.

Risk factors

Several risk factors are combining their actions, like:

- working equipment: electrical, mechanical, thermic, chemical risks;
- working environment: high / low temperature, air flow, humidity, insufficient illumination / especially night, dusts, toxic gases, biological risks;
- work organization: extensive work hours – if necessary;
- work assignments: factors generating physical overload – deficient working positions, in narrow spaces; musculoskeletal strains etc.

Analysis and assessment of risks factors in the performance of work task has emphasized the following:

- task and operations difficulty: average level (3,2), generated by the high level of complexity and danger in work task achievement;
- time pressure: average level (3,5);

- precision in both information reception and processing and decisional and operative level and responsibility for eventually errors implications in activity: high to very high level (4,6);
- repetitive work task: average level (3,5);
- work demands generated by nature and characteristics of work task, by task achievement conditions, by equipments and installations: high to very high level (4,5);
- physical demands, generated by dynamic muscular effort in work gestures (e.g. to hoe etc.) corroborated with exposure to environment conditions, especially extreme in accidental interventions: high level;
- mental, psychosensorial and psychomotor capacities involved in work task achievement: vigilance, memory, concentrated attention, organization and planning skills, initiative, fast and independent decisional skills, visual acuity, psychomotor dexterity.

The existence of neuro-psychical load / stress, specific to subterranean power distribution lines activity, which could influence personnel health and safety state was emphasized by the present study.

These stress factors are in between normal parameters in day to day activities while reaching towards higher levels in cases of interventions in distinctive technical incidents involving difficulty and high responsibility.

Psychophysiological capacities assessment

Assessments of psychophysiological capacities has proven that 60% of the subjects register high to very high levels and 40% subjects register an average level of perceptive – sensorial capacities.

50% subjects register average to high levels of psychomotor capacities development, 30% subjects register low to average levels and 20% subjects register very low to low levels.

General personality traits assessment

General personality traits assessment emphasized that all subjects present balanced personalities traits without negative accentuated traits.

Mental health assessment

90% subjects are situated in normal limits of health status without significant psychopathological symptoms.

10% subjects show some soft and transitory symptoms of a limited nature.

PSI – Ilfeld Test was used in mental health assessment and the resulted symptomatology refers to: muscular contracture, heart – burn, irritability, nervousness, depression symptoms (crying, sadness, discouragement and solitude feelings), apprehension, pessimism, energy loss.

Physical health assessment

Physical health assessment emphasized the existence of the following diseases:

- musculoskeletal diseases (36,1%);
- respiratory diseases (26,9%);
- digestive diseases (17,86%);
- cardio-vascular diseases (17,04%).

Conclusions

The study has revealed the existence of a potential stress risk in subterranean power distribution lines personnel, emphasized also by emotional and psychosomatic levels symptomatology. It also concludes that symptomatology is not the effect of a single risk factor / stress, but the result of presence and action of a combination of risk factors generated by working equipment, working environment, work organization and work task.

References

M. Seracin, R. Iordache, V. Petreanu, I. Grigoriu, C. Oprea - (2004 - 2005) – „Studiu privind evaluarea stării de sănătate a personalului implicat în unele activități din cadrul S.C. ELECTRICA S. A.” (Health Assessment study of personnel in selected activities at S.C. ELECTRICA S.A.)