

**Romanian National Research and Development Institute for Labour Protection** has elaborated a study regarding “Assessment of mental stress in power supply dispatcher activities”

The study pointed out that dispatcher activities in power supply industry ask for a special neuropsychical effort which capable of generating mental stress, as an effect of work overload and high responsibility in case of errors that may result in injuries, loss of lives or damage of industrial property.

### **1. Psychological analysis of the dispatcher activities**

Regarding the content and the nature of work task, the dispatcher activity involves two different types of functions: monitoring and command – operative control. Both functions are performed on the basis of an on-going flow of information that are received on different channels (visual, audio) at the different levels and using different equipments: phone and radio communication, equipment of automatic collecting and transmitting of information from installations, command, processing and displaying equipments. Dispatching is a highly-demanding and complex activity. It requires for the over-stress of certain processes, functions and perceptive-sensorial as well a mental capabilities.

### **2. Mental stress assessment**

**The following indicators have been used in the assessment of mental stress:**

- a) **Work task demands** by emphasizing certain objective parameters, e.g. complexity-speed; precision, etc.
- b) **Subjective assessment:** the self perception of individuals on their own physical and psychical state, throughout working time, at its conclusion as well as afterwards in their spare and leisure time.
- c) **Performance (of behaviour)**, which allows for the construction of mental effort indicators through the introduction of performance elements in work task or behavior achievements (changes of function strategies depending on work load)
- d) **Psycho-physiological indicators** to assess dynamics of some psychophysiological and biochemical parameters involved in work task achievement during work time.

### **Assessment of work task strains**

**Work pace/high level:** the dispatcher has rarely possibility to establish the own work rate.

**Pausing/high to very high level:** the dispatcher doesn't have pauses, he can't be replaced during the activity, he has limited possibilities to interrupt the activity and to leave the workplace; this represents an important professional constraint factor.

**Type of professional behaviour/ high level:** this reflects a complex structure having a better weight behaviours based on choices, algorithmic rules and those based on knowledge (operative interventions which demand decisions and problem solving specific to a specific situation).

**Responsibility/very high level:** the risk of causing accidents and damages of installations and equipments by incorrect interpretation, communication and/or activity decision.

**Precision/high to very high level:** accuracy in achievement of different kind of activities and operations, information, data processing, decisions and communications.

**Overload/under load/ high level:** caused by the unequal, random distribution of the volume of work (by appearing of some unexpected events).

**Ability of communication and cooperation with different types of persons/high to very high level.**

**Physical demands/ low level.**

**Mental demands/ high and very high levels** for all the mental capacities involved in work task achievement: memory, ability in taking independent fast decisions, high concentration, vigilance and communication and cooperation skills.

### **Subjective assessment**

**The total professional load:** very high level-Ef (9,1), evaluated with TLX Index – NASA, involving:

- mental demands, very high level EM (9, 6)
- time demands, high level – ET (8,8)
- individual performance, low level – PP (1,7)

### **Performance assessment**

The assessment performance at psychomotor and psychosensorial levels:

The reported results show average levels of capacity development at psychomotor level, at more than 50 % of people.

Psychosensorial level: there have been recorded good and very good levels regarding the memory, the attention volume, concentration and distribution and the visual perception (volume, speed, accuracy).

## **Psychophysiological indicators**

Has been realized investigations / assessments of the following psychophysiological indicators and parameters: blood pressure, heart rate, skin temperature and flicker fusion critical frequency; visual functions (visual acuity, binocular sight, chromatic sense); the result of the exams: internal, neurological, ophthalmologic, ORL, pulmonary exams, EKG and dosing of some sanguine constants: glycemie, TGO, TGP,  $\mu$ GT, VDRL.

From these investigations had result the next deviations from the normal limits of these parameters:

- 26,67 % with blood pressure,
- 66,67 % with reduction of flicker fusion critical frequency,
- 46,67 % with modification of visual acuity,
- 80 % with modification of binocular sight,
- 6,67 % with modification of chromatic sense.

## **3. Health condition analysis**

### **Physical health status analysis**

The situation of diseases recorded in the last 4 years:

- cardiovascular diseases (21,3%),
- respiratory and digestive diseases (12,9%),
- genito-urinary diseases (12,5%),
- SNC problems (12,2%),
- metabolic diseases (10,4 %),
- musculoskeletal disorders (5,9 %).

### **Psychical health status analysis**

The study used the **PSI – Ilfeld** test for the investigation of the subjective symptomatology, to find out significant psycho-pathological symptoms and eventual emotional, psychophysiological and somatic disorders.

The results of the analysis:

85,6 % of subjects are in between normal parameters – comfort state and mental health, with the absence of eventual significant psychopathological symptoms. 14,28 % of the subjects accused relative pronounced psycho-somatic symptoms.

The symptomatology revealed refers especially at: pessimism, tension, sleep problems, nervousness, irritability, tachycardia, heartburns, lost of appetite, muscular contraction.

#### 4. Assessment of psychological stress condition

**The assessment of the general personality traits and of vulnerability/ stress reactions has been achieved through:**

- application of **FPI, 16 PF, Eysenck (E.P.I.) and Gaston – Berger inventories**. The results of the general personality traits assessment reveal balanced personalities, without particular personality traits that could generate inadequate or erratic behaviour.
- application of **Cattell – “C” Questionnaire of anxiety**, which lead to revealing of some average and under-average levels of anxiety for 90,09 % of the tested subjects.
- application of **Questionnaire of an express assessment of the reactions at psychic stress – SCL – 90 – R**: the tested subjects don't reveal a severe symptomatology in any of the directions from the questionnaire.

The assessment of the mental stress has been achieved using CESP Questionnaire on subjective assessment of stress factors and situations and also the individual reactions at mental stress.

An average level of the total professional demands (2,96) has been recorded as a prime factor of stress. As secondary factors, recording high and very high levels:

- work load and modality of task distribution;
- activity demands;
- constraints and time pressure;
- responsibilities and dangers to cause damages to other people and equipments;
- isolation during the work;
- *the most important secondary factor is represented by the mental demands of the activity as they are perceived by the dispatchers.*

There were recorded an **average** stress level, being rated by other factors (for example, the autonomy of work, the average level of work satisfaction).

#### **Conclusions**

The study outlines the high level of mental effort associated with dispatcher activity which can generate mental stress. There is no significant psychopathological or psychosomatic symptomatology with subjects showing a fair degree of adaptation to specific job demands. Still, long term exposure to stress might as well be the cause of future health disorders.

#### **References**

M.Seracin, R.Iordache: “Cercetari privind elaborarea unor proceduri si metode (indicatori/tehnici) pentru analiza - diagnostic/evaluarea efortului neuropsihic si pentru identificarea factorilor de risc implicati in activitatile cu expunere la riscuri profesionale majore” /’Researches regarding the elaboration of methods and procedures (indicators and techniques) for diagnostic analysis/assessment of neuropsychological effort and the identification of risk factors in activities and professions with major occupational exposure to risk’