

## What Needs to be Changed based on Lessons Learned from Chernobyl

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Direct and root causes of Chernobyl accident have a complex character because many different events having independent origin happened jointly. The catastrophe occurred due to a systemic combination of objective and psychological factors, each of which was, in itself, not a source of danger. Human factor influence on the situation was not so much like operative personnel activity result but as activity of many workers on when previous phases of the plant life cycle. Systemic combination of those factors intensified their influence.

Chernobyl operators erroneous actions could be classified as mistakes. The direct cause of the erroneous actions were a mistaken understanding of the neutron physics processes occurring in the reactor vessel. Theoretically operators could prevent the explosion if they would place faster absorbent rods in five seconds before they pushed “Automatic Defence — 5” button. It is known that human error probability in that conditions, in 5–10 seconds, is practically unity. The root cause of the human errors was based on the fact that operation regulations provided the reactor unit safety. The regulations permitted (i.e., did not prohibit) the conditions the reactor unit was in before the accident in 1986.

Examination of Chernobyl personnel motivation and attitude characteristics has shown that conflict “Human – Technology – Organization” could be presented quantitatively like motivation parameter. The conclusion is very important to solve a problem of the operator reliability. It has directed a search for psychological professional fitness criteria to the activity motivation and attitudes quality and also has drawn nearer nuclear unit safety concept and safety culture concept understanding. Operative personnel job descriptions and daily work practice formed attitude to diligence first of all.

Presented approach in psychological analysis of the personnel activity when accident situation is developed by the comparison between personal aspect, cognitive and operational structures and formalized notation about personnel regulation activity.

The researches have shown that individual psychological data of Chernobyl NPP personnel, which could be a direct cause of wrong actions and lead to the accident, were not differ from another nuclear power plant personnel ones.

Analysis of psychological aspects of Chernobyl accident and investigation of plant personnel motivation changes in the accident consequences elimination environment confirm the necessity to develop concept of careful relation to worker. It is necessary to develop psychological support methodology to form human capital both in two aspects: professional personality formation and human resource management.

The history asks the following questions: have the Chernobyl lessons been learned? Are our contemporaries and next generation ready to provide safety in the nuclear power plants? The terrorist attacks, military actions in the states who have nuclear power plants makes more complex problem of nuclear power plant, all mankind safety.