

## References

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## EVALUATION OF THE EFFECTIVENESS OF PUBLIC ANNOUNCEMENT MEANS TO PREVENT EMERGENCY

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Nowadays, we face a number of challenges: fires, floods, earthquakes; traffic accidents, collapse of buildings and terrorism. Almost all emergencies lead to panic and further loss of life and property. In Tomsk region there are two nuclear hazardous objects, one chemically dangerous object and two hydrotechnical constructions. That is why the prevention of emergency situations is important.

Together with Oleg Sergeyeovich Kaymonov, lieutenant-colonel, head of the department of information technology, automated control systems and communications in Tomsk, we chose to research five public announcement means: street loud-speakers; SMS notification; stands in educational, administrative buildings and outdoors; prevention talks in educational institutions and enterprises; radio and TV broadcasting.

1) **Loudspeakers.** Loudspeaker is an electro-acoustic or mechanical device for a loud sound. In Russia, radio broadcasting is rather widespread and used practically in all cities and villages. This extensive network creates favorable conditions for population warning in case of emergencies, ensures quick information and announcement how to behave in emergency circumstances.

2) **SMS.** Russians are informed about emergency via SMS not for the first year. Megaphone was a pioneer in cooperation with the Ministry of Emergency Situations of Russia. In autumn 2014, this operator was the only one with the technical ability to carry out selective transmission to regions [1].

3) **Stands.** Stands for civil defense and emergencies represent meaningful and accurate information. The information on the stands must be

regularly updated and have a current content. In Tomsk region there are a number of interactive stands (for example, Novosobornaya Square).

4) **Prevention talks.** Prevention talks are held in educational institutions by EMERCOM officers. They are an integral part of education [2].

5) **Radio and TV.** Undoubtedly, at present radio or television are almost in every home. In 2005 in Tomsk, the system of interception of ten terrestrial channels (STS 6 channel, NTV channel 24 and others) and eleven radio channels (“Lighthouse” 68.78 MHz, Europe plus 103.4 MHz and others) was built.

In our research we evaluated the effectiveness of public announcement means in four stages:

1. We defined the criteria: *production costs, population coverage, regularity, maintenance, seasonality and easy to use* [3].

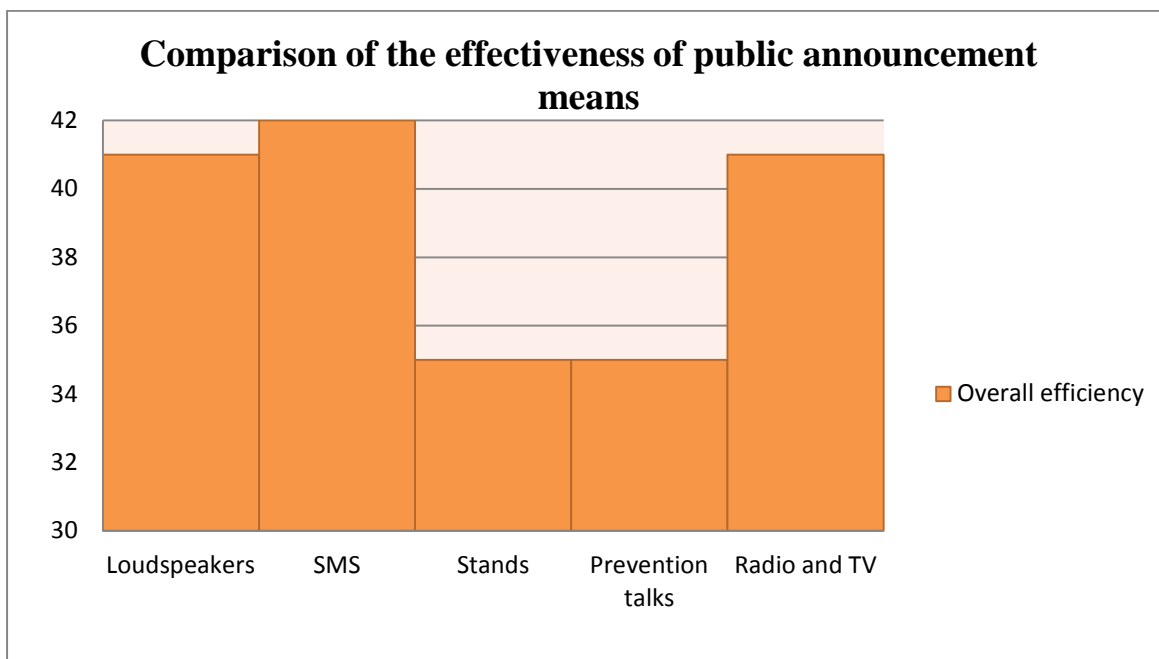
2. Each means was evaluated according to all six factors on a 10-point scale. For example, for the factor *production costs*: 0 is a very expensive way of warning, 10 does not require cash expenditures.

3. The results of the research are presented in *Table 1*.

4. From the obtained results, we draw the conclusion about the effectiveness of public announcement means.

	Loudspeakers	SMS	Stands	Prevention talks	Radio and TV
Production costs	3	5	9	10	5
Population coverage	7	5	1	1	7
Regularity	8	8	10	3	4
Maintenance	3	5	7	9	5
Seasonality	10	10	5	10	10
Convenience	10	10	3	2	10
Overall efficiency	<b>41</b>	<b>42</b>	<b>35</b>	<b>35</b>	<b>41</b>

Table 1. The results of the research



Histogram 1. The results of the research

The histogram shows that the most effective means of notification are: SMS-warning, loudspeakers and television broadcasting. Compared to others, they are more expensive and require a constant monitoring, but they cover a large part of the population and it is a primary purpose of warning systems.

It would be a good thing to improve SMS-warning systems and expand the circle of mobile operators who are engaged in sending SMS over the region (Now there are only two operators: Megaphone and MTS).

Thus, we have reviewed a lot of documentation on the warning systems in Tomsk region and communicated with people who are involved in the work of these systems. The obtained results show that all warning systems are ready to work not only at the usual times, but in the case of emergency.

### References

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