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TOPICAL DIRECTIONS IN DEVELOPMENT OF SOCIAL-HYGIENIC MONITORING AND HEALTH RISK ANALYSIS (IN THE CONTEXT OF INFORMING)

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There are outlined topical directions for development of social-hygienic monitoring and analysis of population health in the context of informing the state government, local government, population and others. The experience of work with setting tasks of the given direction, ways of quality improvement of information-analytic materials has been generalized. There is a list of general terms in SHM (social-hygienic monitoring) which were used for publishing on the site of scientific-practical, analytic works. The main sources of SHM data obtaining have been listed. The pivot table with comments on sections of informing with quoting absolute and percent contents of the works over the last 3 years has been given. There is also given a description of computer programs and their application for gathering, processing indicators and data in SHM. There are described potential perspectives of modernizing the system of informing on SHM results.

Key words: social-hygienic monitoring, medium-health, health risk assessment, informing, tasks, priorities, computer programs, topics, system improvement.

Effecting social-hygienic monitoring (SHM) on the territories of the Russian Federation is one of the main directions of the Federal Supervision Agency for Customer Protection and Human Well-being [8]. Within the framework of SHM, there is accumulation and classification of information using relevant modern tools of automation of gathering, processing, visualization of indicators and data which make the system an important tool for analysis and forecast of the situation [2, 4, 5, 6, 7].

Including into the SHM system of the works which apply methods of risk assessment using medical-hygienic ranging of the territories, cause-and-effect analysis between the living environment and population health condition on the basis of objective laboratory data allowed to considerably improve the quality of

the data obtained. SHM provides scientific grounds for making managerial decisions of different levels aimed at improvement of sanitation-epidemiologic situation [1,3].

As for the results of social-hygienic monitoring (SHM) the Federal Supervision Agency for Consumer Protection and Human Well-being in Samara region in its annual order (on new MR (methodological recommendations) #1.1.-13 dated 18.01.2013 'On preparation of the materials for state report 'On condition of sanitation-epidemiologic well-being of the population in the Russian Federation', MR #341 dated 20.09.2010 'Social-hygienic monitoring. Analysis of medical-demographic and social-economic indicators at the regional level' and others) prepares the following information-analytic materials: 1) a chapter to the

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state report on sanitation-epidemiologic situation in Samara region ‘Results of social-hygienic monitoring over the year and in its dynamics over the last three years’; 2) ‘Assessment of living environment factors influence on population health according to the indicators of social-hygienic monitoring’, Samara, Kinel, Volzhskiy, Kinel'skiy, Krasnoyarskiy areas; ‘Analysis of drug-addition dynamics, chronic alcoholism and alcoholic psychotic disorders dynamics’, ‘Analysis of domestic poisoning including by alcohol with fatal cases’ in Samara region as well as the materials for the site 63.rospotrebnadzor.ru (in the order of execution of ‘Administrative regulation of the Federal Supervision Agency for Customer Rights Protection and Human Well-being on executing the governmental function of informing the Government of the Russian Federation, government of Russian Federation subjects and population on sanitation-epidemiologic situation and measures taken to provide sanitation-epidemiologic well-being of the population’ adopted by the order of the Ministry of Healthcare and Social Development of the Russian Federation #656 dated 19.10.2007); 3) for internal use – answers for the requests of the Supervision Agency department in order to make generalizations with other department (including by means of digital directory with limited access where all the necessary for departmental work information is placed from regional information fund (RIF SHM); 4) scientific-practical articles for press including central one and compendia of conference works (international, Russian and regional) etc..

The common goals set for SHM in the sphere of informing are: 1) increase of the volume of information units in the SHM funds; 2) improvement of the quality of material preparation; 3) determining new publication topics.

The improvement of the quality of material preparation might be achieved through: 1) determination of specified strategic (long-term) and tactic (short-term) goals (in their intercon-

nection with the title of the work) for integrated opportunity of application in the sphere of developing relevant managerial decisions; 2) outlining factual and forecast trends in systematized mobile information flows through regular updating RIF SHM, federal information fund (FIF SHM) with indicators and data, results of analytic studies (databases), opportunities for studying the dynamics of medical-demographic processes, morbidity, social-economic indicators, living environment condition indicators (atmospheric air, water, soil); 3) extending the knowledge by means of mastering and applying new rational in their application SHM affordable financially methods of research, methodological recommendations, software of SHM; 4) obtaining new information from academic literature and application of the elaborated ideas in the work of SHM; 5) defining priorities (upon the results of ranging, carcinogenic danger and so on) for observation in the SHM system; 6) defining the degree of substantiality or non-substantiality, risks in implementing measures on SHM development; 7) effecting logical control with the following correction and relevant additions (reductions); 8) optimization of the accumulated knowledge with the following elaboration of algorithms of managing information flows in SHM which are convenient for using pivot tables, models of emergent models of research organization in preparation of scientific-argumentative medical works.

The topics of the publications are formed based on new perspectives on analytical opportunities for the account of extending information funds of SHM, application of modern SHM software, agreed and mutual integration with other sciences in order to determine common topical problems connected with adverse influence of environment on population health (table 1).

Table 1

General topics in SHM of the information-analytic reports which are published in press
and on the site

#	Topics
1	The history of SHM development at the regional level
2	SHM: definition, tasks, functions
3	Organisation of SHM process
4	Algorithms of SHM
5	Conceptual framework of SHM at the regional level
6	Practical usability of SHM in the sphere of healthcare
7	Minimum tool set of methods of hygienic diagnostics: based on the experience of work in conditions of financial limitations
8	System analysis of population health and living environment
9	Information funds of SHM
10	On updating databases FIF SHM and RIF SHM
11	Monitoring of the main indicators of SHM
12	Results of SHM department work
13	Methodological fundamentals, approaches in organisation of procedures on assessing living environment and population health at the regional level
14	Multi-level system of studying interconnections in the system 'environment-health'
15	Range of opportunities of SHM in conducting analytical works
16	The issue of assessing the living environment influence on population health
17	Results of ranging territoris on health and living environment indicators
18	Comparative analysis of medical-demographic situation
19	Dynamics of some medical-statistic indicators of population health
20	Results of studying the processes of urbanization and medical mapping
21	Demographic situation and population health condition
22	Reproduction of the region population
23	Dynamics of the indicators of natural movement of the population and the forecat life expectancy
24	Morbidity, mortality, disability among the population as a result of malignant tumors
25	Socially significant pathologies among the population
26	Monitoring of inborn malformations among the population
27	Analysis of health of the younger generation
28	Interdependence between the illnesses connected with micronutrient insufficiency and indicators of physical development among children
29	Analysis of morbidity, disability and mortality among the population
30	From the experience of studying ecologically conditioned morbidity among the population
31	Results of the laboratory control in the system of SHM
32	Results of studying priority chemical substances in the atmospheric air of local settlements and drinking water in the systems
33	Contamination of food products with heavy metals
34	Monitoring of quality and safety of food products and population health
35	Results of studying drug-abuse disorders among the population
36	Analysis of acute toxic exposure with chemical etiology
37	The issue of studying the dynamics of drug-abuse disorders
38	Health problems caused by smoking (materials on the problem studies in SHM)
39	International day of mental health
40	Healthy lifestyle
41	Particular issues of conducting ecologic-hygienice analysis
#	Topics
42	Innovation technologies of SHM at the regional level

43	Geographic information systems in SHM
44	On usage of geo-information systems
45	Prenosological diagnostics in SHM
46	Population health risk assessment
47	Deveopment of SHM in the direction of the system on informing about health risks
48	System of measures on sanitation protection of atmospheric air
49	SHM: list and publication theses

Scientific-practical justification of procedures and works on information which were elaborated in the department of SHM of the Agency is built as a result of using the information on the following materials:

1) Ministry of Healthcare in Samara region (reporting forms: F #12 'Report on the number of illnesses registered among the ill people living within the area of the servicing medical institution', F #35 'Report on people with malignant tumors', absolute indicators, F #63 'Information on illnesses connected with micronutrient insufficiency', F #11 'Information on drug-abuse disorders morbidity', F #10 'Information on mental disorders and behavior disorders (except the illnesses caused by taking psychoactive substances)', F #10 'Information on disabled children', F #31 'Information on medical help to children and school teenagers', F #32 'Information on medical help to pregnant women, women in labour and new mothers' and others);

2) territory agency of the Federal State Statistics Service in Samara region (demography, social-economic indicators);

3) Privolzhskiy interregional Service of Hydrometeorology and Living Environment Monitoring (living environment – information on concentrations of chemical substances in the air of local settlements from stationary observation posts, information about soil safety in cities and so on);

4) Federal state-funded healthcare institution (FSFHI) 'Centre of hygiene and epidemiology of Samara region' (information on sources of atmospheric air pollution, sanitation-epidemiologic safety of water-supply sources (standards SGM «WR_PW»), quarterly reports in PC Fparser on drinking water and safety of foodstuff, filled templates in FIF

SHM on labour hygiene (templates SGM «Trud» and radiation safety SGM «Rad»);

5) databases from RIF SHM.

Also in order to form the works on informing about the results of SHM the following materials are used: 1) from reporting forms #11-11 'Information on conducting social-hygienic monitoring over the year' and #3-inform 'Information on using information and communication technologies and production of goods (words, services) connected with them' (filled by the specialists of SHM department); F.12-12 'Information on the results of toxicological monitoring' (filled by the specialists of the department of the Service for Diet Hygiene on the basis of emergency notifications provided by treatment-preventing institutions of Samara region with program-technical support of specialists of ASM (automated systems of management) from SHM); 2) from the implementation of the measures stated in the departmental target program 'Organisation and conducting social-hygienic monitoring in Samara region (Socgig-monitoring)' (All Russia Center of Production); 3) reports on indicators of activity of SHM department; 4) analysis of meeting production-financial plans of SHM department; 5) scientific-practical works of the department (table 2).

At the regional level as a result of the necessity of mastering computer programs (PC blocks 'AS SHM' form Information systems Krista LLC and others) in order to gather and analyze the indicators and data both in the SHM department and in other departments of the Service in respect of SHM activity, there has been integrated AMS (automated management system) (programmers) subdivision into the SHM department. Thus, SHM was involved into the work of all the control de-

partments of the Service supporting software for specialists with engineering education.

Conducting medical-statistic analysis on the indicators and data of RIF SHM is performed by the specialists of SHM with application of PC Statistica 6.0 – parametric and non-parametric statistics; with the help of PC Fparser information from quarterly reports is gathered, annual average concentration of chemical substances in drinking water in the supply system is measured in foodstuff and the obtained data are transferred into the templates SGM«Food», SGM«Env» (indicators and data on the atmospheric air and soil are uploaded according to the materials of

Privolzhskiy interregional agency of hydrometeorology and living environment monitoring who already have the calculations of long-term annual average concentrations, information is checked by the specialists of the supervisory service on communal hygiene of the Service); using PC ‘GeoInfor’ (Samara-Informsputnik LLC) there are marked monitoring points and concentrations of priority chemical substances (for the period of 2006-2012) in drinking water on the maps of all 35 administrative territories of Samara region (with updating the digital map basis by layers and so on).

Table 2

Information-analytic materials on the results of SHM process over the period from 2010 to 2012 (absolute number / % from the total amount over 3 years)

Year	To the Governor of the region ¹		Chapters of state report on San-epid on the situation ³		Publications on the site	
	To the heads of administrations ²		Abs.	%	Abs.	%
	Abs.	%				
2010	8	33,3	2	33,3	9	20
2011	8	33,3	2	33,3	18	40
2012	8	33,3	2	33,3	18	40
Total	24		6		45	
Year	SRP (scientific-research paper)		Information-analytic materias for internal use*		Lectures for students of medical-preventive department	
2010	4	(40)	544	21	11	27
2011	3	(30)	989	38	12	30
2012	3	(30)	1053	41	17	43
Total	10		2586		40	

Note: ¹‘Analysis of dynamics of drug addictions, chronic alcoholism and alcoholic psychotic disorders’, ‘Analysis of dynamics of domestic toxic exposure including by alcohol with lethal cases’ in Samara region; ² ‘Assessment of environmental factors influence on population health according to the date of social-hygienic monitoring’ – in 6 territories; ³ in Samara region and the city of Samara *According to the date of all the employees activity of SHM department (doctors and programmers).

For students of medical-preventive department (target enrolment) of Samara State Medical University at practical lessons and lectures there are considered the issues of hygienic regulation; organization-functional activity of SHM; methods of revealing interconnection between living environment pollution and population health; health risk assessments; population health analysis for the younger generation in the system of SHM; hygiene of sanitation doctors labour; hygienic requirements to the use of computers; monitoring the quality of atmospheric air and water; population health and so on.

Modernization of the system of informing about the results of SHM process at the regional level could prospectively develop in the following ways:

1. Development and implementation of MR on adapted for SHM Service population health risk assessment (including the list of the requested information from adjacent departments, organization-participants in SHM process, external companies, and model of application of practical results).

2. Provision of the necessary list of topics for publications and exploring possibilities of applying analytic works on the topics for State

control and supervisory services (research, expertise).

3. Development and implementation of documents having regulatory-legislative character in the sphere of technical regulation of international issues on computer internet-safety (variable electromagnitude fields, noise) in connection with implementation into the activity of Internet Service and connected with it computer programs and electronic-digital equipment).

4. Extension of the list of chemical substances appearing in the template lists of reporting forms on SHM; including additional table of options on the name of one and the same chemical substance in order to increase conven-

ience of usability of information for scientific-practical research.

5. Improvement of the quality informing at the regional level of government and local government by describing not only mass non-infectious illnesses and singling out among them those which are socially-significant and endemically-conditioned and other pathologies but also infectious morbidity reflected in the reporting forms of the Ministry of Healthcare of Samara regions and also by adding into the works of SHM of the results of ranging the territories on micro-biologic indicators of living environment pollution.

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