# ONCOPATHOLOGY IN THE OIL AND GAS INDUSTRY IN RUSSIA IN THE FAR NORTH AND OTHER REGIONS OF WORLD

V.N. Bagryantsev<sup>1,1;1,2</sup>, I.V. Reva<sup>1,2;2</sup>, I.A. Odintsova<sup>3</sup>, O.Yu Girya<sup>1,2;2</sup>, N.V. Kotsar<sup>1</sup>, M.V. Indik<sup>1,1</sup>, V.E. Tolmachev<sup>1,1;1,2</sup>, A.N. Gulkov<sup>1,1</sup>, G.V. Reva <sup>1,1;1,2</sup>

<sup>1</sup>Far Eastern Federal University, <sup>1,1</sup>Engineering School FEFU; <sup>1,2</sup>Biomedicine School FEFU, Vladivostok, Russia e-mail: RevaGal@yandex.ru; <sup>2</sup>International Medical Research Center (IMERC), Niigata, Japan, e-mail: avers2@yandex.ru; <sup>3</sup>S.M. Kirov Military Medical Academy, Saint Petersburg, Russia

The work was carried out with financial support of the Development Program and the FEFU research fund, within the framework of the state task 2014/36 of 03.02.2014 and the International grant of the FEFU (agreement No. 13-09-0602-m of November 6, 2013).



**Valery N. Bagryantsev,**Professor, Head of Department,
e-mail: z.drvnb@gmail.com

### INTRODUCTION

According to Lin CK, Hung HY, Christiani DC, Forastiere F, Lin RT. (2017) the pooled risk of lung cancer mortality for residents living nearby PICs was 1.03-fold higher than people living in non-PIC areas (95% CI = 0.98-1.09), with a low heterogeneity among studies ( $I^2 = 25.3\%$ ). Such effect was stronger by a factor of 12.6% for the year of follow-up started 1 year earlier (p-value = 0.034) [6]. Their and other researches meta-analysis gathering current evidence suggests only a slightly higher risk of lung cancer mortality among residents living nearby PICs, albeit such association didn't receive statistically significance [9, 14. Reasons for higher risks of early residential exposure to PICs might be attributable to the lack of or less stringent air pollution regulations. But the objective research Osakwe KA, Cooper K, Stewart D, Wainwright CL, Klein S. (2017) is to collate, synthesize and present the available evidence on the policies and guidance statements for remote healthcare practitioners on managing medical emergencies in the offshore oil and gas industry [12].

Results of Whitworth KW, Marshall AK, Symanski E. (2017) are suggestive of an association between maternal residential proximity to UGD-activity and preterm birth and fetal death. Quantifying chemical and non-chemical stressors among residents near UGD should be prioritized [16].

In the opinion of Cox RS, Irwin P, Scannell L, Ungar M, Bennett TD. (2017) although relatively few

studies have specifically focused on children and youth in this context, the majority of this research uncovers a range of negative health impacts that are directly and indirectly related to the development and ongoing operations of natural resource production, particularly oil and gas, coal, and nuclear energy [1]. Psychosocial and cultural effects, however, remain largely unexamined and provide a rich avenue for further research [10].

Purpose of our the study

was identify data on the incidence of diseases associated with environmental factors in the oil and gas industry.

#### **METHODS**

To obtain the data, we used the analysis of scientific data from different regions of the world.

### RESULTS

Oil and gas development emits known hematological carcinogens, such as benzene, and increasingly occurs in residential areas [3, 7]. At present, there is growing interest in research examining the relationship between occupational stress and mental health. Mason KL, Retzer KD, Hill R, Lincoln JM. (2017) observed during 2003-2013, fatality rates for oil and gas extraction workers decreased for all causes of death except those associated with fall events, which increased 2% annually during 2003-2013 [8, 13]. Sixty-three fatal falls were identified, accounting for 15% of all fatal events.

It was showed in the oil and gas industry and demonstrates that diagnoses of a digestive and traumatic nature are the most frequent [4, 5]. A holistic approach to health (as opposed to a predominant focus on fitness to work) bears more attention to female.

## CONCLUSION

Due to development of oil and gas industry a larger population has the potential for exposure to known hematologic carcinogens, further study is clearly needed to substantiate both our positive and negative findings. Future studies should incorporate information on oil and gas development activities and production levels, as well as levels of specific pollutants of interest (e.g. benzene) near homes, schools, and day care centers; provide age-specific residential histories; compare cases to controls without cancer; and address other potential confounders, and environmental stressors [2, 11]. The use of rigorous methodologies to assess environmental, social and health impacts of specific interventions is crucial to disentangle the various components of environmental questions and to inform public opinion [15]. It was exercise highlights the knowledge gaps that need filling and taking into due consideration before future transnational and crossborder monitoring and management plans and activities can be addressed in in the oil and gas industry.

### REFERENCES

- COX RS, IRWIN P, SCANNELL L, UNGAR M, BENNETT TD. Children and youth's biopsychosocial well-being in the context of energy resource activities.// Environ Res. 2017 Oct;158:499-507. doi: 10.1016/j.envres.2017.07.014.
- FALK RT, PICKLE LW, FONTHAM ET, CORREA P, MORSE A, CHEN V, FRAUMENI JJ JR. Occupation and pancreatic cancer risk in Louisiana.//Am J Ind Med. 1990;18(5):565-76.
- 3. Jamebozorgi I, Mahjoubi F, Pouryaghoub G, Mehrdad R, Majidzadeh T, Saltanatpour Z, Nasiri F. Micronucleus, Nucleoplasmic Bridge, and Nuclear Budding in Peripheral Blood Cells of WorkersExposed to Low Level Benzene.//Int J Occup Environ Med. 2016 Oct;7(4):227-33. doi: 10.15171/ijoem.2016.785.
- ISMAIL B, TENG IL, MUHAMMAD SAMUDI Y. Relative radiological risks derived from different TEN-ORM wastes in Malaysia.//Radiat Prot Dosimetry. 2011 Nov;147(4):600-7. doi: 10.1093/rpd/ncq577.
- 5. KAMAL A, CINCINELLI A, MARTELLINI T, PALCHETTI I, BETTAZZI F, MALIK RN. Health and carcinogenic risk evaluation for cohorts exposed to PAHs in petrochemical workplaces in Rawalpindi city (Pakistan).//Int J Environ Health Res. 2016;26(1):37-57. doi: 10.1080/09603123.2015.1007843.

- Lin CK, Hung HY, Christiani DC, Forastiere F, Lin RT. Lung cancer mortality of residents living near petrochemical industrial complexes: a meta-analysis.//Environ Health. 2017 Sep 26;16(1):101. doi: 10.1186/s12940-017-0309-2.
- MANGANO MC, SARA G. Collating science-based evidence to inform public opinion on the environmental effects of marine drilling platforms in the Mediterranean Sea.//J Environ Manage. 2017 Mar 1;188:195-202. doi: 10.1016/j.jenvman.2016.12.013.
- MASON KL, RETZER KD, HILL R, LINCOLN JM.
   Occupational Fatalities Resulting from Falls in the Oil and Gas Extraction Industry, United States, 2005-2014.//MMWR Morb Mortal Wkly Rep. 2017 Apr 28;66(16):417-421. doi: 10.15585/mmwr.mm6616a2.
- MCKENZIE LM, ALLSHOUSE WB, BYERS TE, BEDRICK EJ, SERDAR B, ADGATE JL. Childhood hematologic cancer and residential proximity o oil and gas development.//PLoS One. 2017 Feb 15;12(2):e0170423. doi: 10.1371/journal. pone.0170423.
- MEHLMAN MA. Dangerous and cancer-causing properties of products and chemicals in the oil refining and petrochemical industry: Part V--Asbestos-caused cancers and exposure of workers in the oilrefining industry.//Toxicol Ind Health. 1991 Jan-Mar;7(1-2):53-71.
- 11. MILLS PK, NEWELL GR, JOHNSON DE. Testicular cancer associated with employment in agriculture and oil and natural gas extraction.//Lancet. 1984 Jan 28:1(8370):207-10.
- 12. OSAKWE KA, COOPER K, STEWART D, WAIN-WRIGHT CL, KLEIN S. Textual synthesis of policies and guidance statements for remote healthcare practitioners on managing medical emergencies in the oil and gas industry: a systematic review protocol.//JBI Database System Rev Implement Rep. 2017 Aug;15(8):1987-1990. doi: 10.11124/JBIS-RIR-2016-003138.
- SULLIVAN M. More evidence of unpublished industry studies of lead smelter/refinery workers.//Int J Occup Environ Health. 2015;21(4):308-13. doi: 10.1179/204 9396715Y.0000000010.
- SATHIAKUMAR N, DELZELL E, COLE P, BRILL I, FRISCH J, SPIVEY G. A case-control study of leukemia among petroleum workers.//J Occup Environ Med. 1995 Nov;37(11):1269-77.
- 15. Wang L, Zhao Y, Liu X, Huang T, Wang Y, Gao H, Ma J. Cancer risk of petrochemical workers exposed to airborne PAHs in industrial Lanzhou City, China.//Environ Sci Pollut Res Int. 2015 Dec;22(24):19793-803. doi: 10.1007/s11356-015-5203-2.
- 16. WHITWORTH KW, MARSHALL AK, SYMANSKI E. Maternal residential proximity to unconventional gas development and perinatal outcomes among a diverse urban population in Texas.//PLoS One. 2017 Jul 21;12(7):e0180966. doi: 10.1371/journal. pone.0180966. eCollection 2017.