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Hygienic Requirements of Urban Living Environment in the Russian Federation and in Italy: a comparison

V.I. Popov¹, L. Capasso², OV. Klepikov¹, L. Appolloni³, D. D'Alessandro³

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Parole chiave: Igiene urbana, ambiente di vita, diritto sanitario, governo del territorio

Abstract

Aim. Urban planning tries to contain and regulate the uncontrolled growth of cities, encouraging their sustainable development at environmental, social and health levels. In the present work, the authors compare the regulatory frameworks of the Russian Federation and of Italy, with particular attention paid to the urban aspects of living spaces.

Method. Considering the extant normative production in the two countries, the authors examine national legislation for Italy and federal legislation for Russia, mainly taking into account the following aspects: urban planning tools and environmental and sanitary protection of living spaces.

Results. Hygienic-sanitary requirements regarding living environment in Russia are essentially expressed by two regulatory systems (SNiP and SanPiN), while in Italy they are regulated by the D.M. 07/05/1975. The main principles of urban planning in Russia are expressed by federal standards, while in Italy they are incorporated in the Municipal General Plan (PRG) and in the various local regulations, where all the superordinate regulations are summarized. Finally, aspects related to environmental quality in both countries are governed by various specific laws (federal and state); a complex system of rules that take into account potential impacts on health and the environment.

Conclusions. The authors reckon that clear and updated regulatory tools should be developed, especially in Italy that lags behind, regarding the building and urban hygiene, relying on the most recent acquisitions of international scientific literature in order to guarantee the highest standards in Public Health safeguard.

Introduction

The World Health Organization (WHO) defines the understanding of living environment based on a four-layer model of housing, taking into consideration (a) the physical structure of the dwelling as well as (b) the significance of the home (psychological and social), (c) the external dimension of the immediate housing environment, and (d) the community with all

neighbors (1). City development, intensive house construction, low-rise housing construction and private house construction in city suburbs lead not only to positive, but to negative changes in the natural and living environment as well (2). Increased impact of unfavorable factors in house construction and in maintenance of accommodation facilities may come from disregard of ecological and hygienic requirements when designing and engineering houses with

¹ State Budget Educational Establishment of Higher Professional Education "Voronezh N.N. Burdenko State Medical University" of the Ministry of Healthcare of Russia, Voronezh, Russia

² Department of Public Health, Experimental and Forensic Medicine, University of Pavia, Pavia, Italy

³ Department of Civil, Building and Environmental Engineering, Sapienza University of Rome, Rome, Italy

poor quality of construction materials, violating requirements of maintenance of accommodation facilities (3).

In order to reduce the health consequences of these problems, each country, at least in Europe, has a specific building regulatory system encompassing the building regulations and the building control system; these systems show many differences between countries regarding who sets the building regulations, how the technical building regulations are organized and formulated, what is the role of national standards and how building regulations apply to pre-existing buildings (4).

These regulations are fundamental because people spend most part of their time in close living environment (5-8) and a relevant risk for their health is linked to the influence of poor living conditions, due to high level and duration of exposure to unfavorable factors (9, 10). However, it is difficult to optimize living conditions at the community level, because of the presence of close interrelations between urban and internal housing environment (11, 8). Complex solution of sanitary-hygienic challenges included in the system “natural environment – living environment – health of a human being” is necessary nowadays (7), the importance of this problem is also connected with the increased complication of housing construction (12).

Urban planning is trying to reduce, restore and regulate an exaggerated and uncontrolled urban growth, to avoid soil consumption and to enhance a sustainable development on environmental, social and health levels (13, 14). This requires living spaces quality, linked to integration of natural environment, built environment, sustainable mobility, paying a notable attention to social issues that determinate effects on human health (15, 16). Following this idea, new urban planning models are supported by an increasing participation of inhabitants with perceived surveys for the so-called “community based urban planning”.

Recently, the Italian authors of this paper carried a survey about hygienic and sanitary aspects of urban planning in Italy (14), that highlighted not complementarity, as expected, but deep contradictions between national and local (regional) urban legislation regarding the aspects of Public Health. In the present research the authors compared the regulamentary framework of the Russian Federation and that of Italy, taking into account urban aspects of living spaces, because the Russian Federation offers a good basis for that comparison. Even if there are significant differences between the two countries - Russia is a federal State, the largest in the world, with a large variety of geographical areas, composed by several autonomous subjects, while – by contrast – Italy is a relatively tiny country, both in terms of size and of population, divided into twenty Regions with limited autonomy - nevertheless, some climatic and geographic differences exist also in Italy.

Methods

The proposal of the present study was to compare the regulamentary frameworks of Russian Federation and Italy, regarding urban aspects of living spaces. Considering the extent of regional (Italy) and national (Russian Federation) normative production, as well as its continuous evolution, the research might result not completely exhaustive, therefore the attention has been focused only to legislations at – respectively – national and federal level.

We are aware that such decision represents the major limitation of present study, because different areas have different regulations in both the countries, but this was the only way to compare the general principles acting on federal/national scale.

A sources search has been carried out until February 28th, 2018 on both mainstream (Google) and legal-based (DeJure-Giuffré e

Maxima-Praxis) search engines. The analysis of normative instruments so retrieved took into account two main aspects:

- urban planning tools;
- environmental and sanitary protection of living spaces.

A comparison of the major contents is described, in order to understand their implications for Public Health.

Results

Although the Russian Federation and Italy are two very different countries under a number of aspects, a confrontation might be useful (17). In particular Russia is a Federal Republic, Italy is a unitary state with some autonomy granted to the Regions by the Constitutional Reform of 2001.

Table 1 shows some descriptive statistics about the two countries. Italy is a relatively small country, especially if compared to Russia, which is the largest country in the world (about sixty-time larger). The difference is dramatically reduced considering population, that in the Russian Federation it is only 2.4 times larger than in Italy. The combination of these two data explains the impressive difference in terms of population density. Urban population results to be 72.6% of the total in the Russian Federation and 69.3% in Italy (according to the European Union definition, *cities* have 50,000-250,000 inhabitants) (18). On the other hand, if we

consider the population living in *large cities* (≥ 250.000 inhabitants), this represents 41.3% of the total in the Russian Federation versus just 15.3% in Italy. This huge difference gives us an indirect estimation of population density in urban areas.

Table 2 shows a comparison between the regulations of the two Countries. First of all, it should be noted that currently there are no documents in the Russian Federation that would contain the whole set of sanitary-hygienic requirements about house construction and maintenance of accommodation facilities.

Technical approvals regulating construction of residential sectors are currently shared by twelve federal agencies. On the basis of an investigation carried out in 43 cities and towns of the Russian Federation by the Institute for Urban Economics using the World Bank methodology, a list was prepared of technical approvals necessary for housing construction, which consisted of up to 33 different procedures (19).

A significant number of factors regarding sanitary-hygienic safety of the living environment are regulated by various miscellaneous documents. To start with, there are two systems regulating (a) the issues of sanitary-hygienic safety of housing construction and (b) the maintenance of accommodation facilities at the community level: Construction Norms and Regulations (SNiP); Sanitary Regulations and Standards (SanPiN).

Table 1 - Demographic Characteristics of the two Countries

Characteristics	Russian Federation	Italy
Total population (2017)	146,838,993	60,507,590
Land area (Km ²)	17,098,242	301,338
Density (inhabitants/Km ²)	8.6	200.8
% urban population*	72.6	69.3
% population living in large cities*	41.3	15.3

*According to the EU definition, "cities" have 50,000-250,000 inhabitants, "large cities" >250.000 inhabitants (18).

Table 2 - Urban planning and environmental quality regulation in the Russian Federation and Italy

Issue	Russia Federation	Italy
Urban planning	- Guidelines of the Urban Planning Code of the Russian Federation N. 190-φ3 of 29.12.2004 (edited on 19.12.2016, revised and expanded on 01.01.2017).	- Interministerial Decree n° 1444 of 2 April 1968 (Binding limits of building density, height, distance between buildings and maximum ratios between the areas destined for residential and productive settlements and public spaces or reserved for collective activities, public green areas or parking areas, to be observed for the purpose of training new urban planning tools or the revision of existing ones, pursuant to art. 17 of the law n. 765 of 1967); - Urban Law n° 1150 of 17 August 1942
Environmental quality	Sanitary-protection zone - Guidelines of Federal Law N. 52-φ3 of 30.03.1999 "On Sanitary and Epidemiological Welfare of the Population" (Article 12) - Land Code of the Russian Federation - Federal Law N. 96-φ3 of 04.05.1999 "On Protection of Atmospheric Air" - Act N. 74 of the Chief State Medical Officer of the Russian Federation of 25.09.2007 "Enactment of New Edition of Sanitary Epidemiological Rules" - Regulations SanPiN 2.2.1./2.1.1.1200-03 "Sanitary Protection Zones and Sanitary Classification of Enterprises, Buildings and Other Objects" - Act N. 30 of the Chief State Medical Officer of the Russian Federation of 29.05.2007 "Approval of Sanitary Rules" - Regulations SP 2.6.1.2216-07 "Sanitary Protection Zones and Radiation Control Areas. Operating Conditions and Substantiation of Boundaries"	Sanitary-protection zone - Legislative Decree n° 152 of 3 April 2006 (Environmental Regulations) Buffer zones for roads - Interministerial Decree n° 1404 of 1 April 1968 (Minimum distances to protect the road to be observed in the construction outside the perimeter of population centers) - Legislative Decree n° 285 of 30 April 1992 (New Road Code) and Decree of the President of the Republic n° 495 of 16 December 1992 (Regulations for the execution and implementation of the new road code); - Interministerial Decree n° 1444 of 2 April 1968 Buffer zones for airports - Royal Decree of 30 March 1942 Buffer zones for railways - Decree of the President of the Republic n° 753 of 11 July 1980 Protection of cemetery areas - Royal Decree n° 1265 of 27 July 1934, in particular art. 338, as amended by the art. 28 of the law n° 166 of 1 August 2002 Buffer zones for aqueducts - Legislative Decree n° 152 of 3 April 2006 (Environmental Regulations), in particular article n° 94 Contaminated sites - Legislative Decree n° 152 of 3 April 2006 (Environmental Regulations), in particular Part Fourth Title V "Reclamation of contaminated sites"-

As it happens in Russia, also in Italy there is not a single regulation that deals with construction and maintenance of dwellings, integrating both hygienic and constructive requirements. Hygienic indoor characteristics of dwellings are summarized, as an exception, in a single regulation, a

ministerial decree (D.M.) issued by the Minister of Health on 05.07.1975. This regulation did not change until 2018, except for a detail regarding dwelling placed in mountainous community, regulated by another Minister of Health Decree in 1999 (D.M. 9.06.1999). The 1975 decree is

incomplete for what concerns a number of risk factor for human health (such as indoor air pollutants, ionizing and non-ionizing radiations, etc.) and it is outdated, because of changed living habits and new approaches to housing (20-22). Other regulations at different levels (state and regional) deal with outdoor environmental quality (e.g. building site, zoning, etc.), also related to the urban context (population density, buildings highness and distances, etc.) and to building materials and construction technologies.

Urban planning regulations

Construction site is regulated by the guidelines of the Urban Planning Code of the Russian Federation N. 190-φ3 of 29.12.2004 (edited on 19.12.2016, revised and expanded on 01.01.2017). Article 35 determines types and structure of urban and other human settlement areas.

Residential areas may include: 1) private housing built-up area; 2) low-rising housing construction area; 3) middle-rising housing construction area; 4) high-rising housing construction area; 5) residential development areas of other types. In accordance with the Urban Planning Code of the Russian Federation, location of isolated, built-in or attached community and municipal facilities, healthcare facilities, pre-school, primary school and secondary school education facilities, religious buildings, parking places, garages, other environmentally-friendly objects related to personal accommodation may be considered acceptable in residential areas. Residential areas may also include areas intended for gardening. Residential development areas should be separated from potential sources of negative impact (industrial, heating, agricultural, transport enterprises) by a sanitary-protection zone or a safety gap.

Regarding Italy, all the topics described above are included into the *Piano Regolatore Generale* (PRG), integrated with other

municipal regulations such as *Regolamenti Edilizi* (Municipal Building Regulation) and *Regolamenti Locali di Igiene* (Local Hygiene regulations). The PRG is a local plan acted by the municipalities, that follows the principles indicated by a national law, the Urbanistic Law n. 1150 of 17.08.1942, with little changes introduced by the Presidential Decree (DPR) n. 380 of 06.01.2001 and related administrative regulations (21-23). The PRG, for some specific parameters such as living density, building heights and distances, green areas, parking, and so on, refers to *Decreto Interministeriale* (D.I.) 2.04.1968, n. 1444.

As exposed in a recent study (14), the law n. 1150/1942 is modern and viable, but shows two serious limitations: first, it did not have a real application due to the lack of an implementing regulation and also because of a centralistic approach that conflicts with the new “regional” structure of the Nation introduced also by the Constitutional Reform (16, 17). The application of PRG, introduced by this law, at urban planning in different municipalities around the national territory, showed a number of *caveats* linked to slow updating of the new regulatory, socio-economic and scientific changes.

Similar problems are shown by the *Regolamenti Edilizi* (Municipal Building Regulations) and the *Regolamenti Locali di Igiene* (Local Hygiene regulations) (24), that, sometime, are in contrast also between them. To overcome this last problem, a nation-wide scheme for building codes (*Regolamento Edilizio Tipo – RET*) was issued by the State-Regions Conference and the Association of Italian Municipalities (*Associazione Nazionale Comuni Italiani – ANCI*) in 2016 (25). Aim of this document is to simplify and harmonize urban planning on a municipal level and to include all urban, environmental and sanitary issues into a single regulation. For the moment, only few Regions have adopted and implemented this scheme in a regional regulation.

Environmental quality

In the Russian Federation the environmental quality provisions are linked to the Sanitary-protection zone development, which is technically regulated by (a) the guidelines of Federal Law N. 52-φ3 of 30.03.1999 “On Sanitary and Epidemiological Welfare of the Population” (Article 12), (b) the Land Code of the Russian Federation, Federal Law N. 96-φ3 of 04.05.1999 “On Protection of Atmospheric Air”, (c) the Act N. 74 of the Chief State Medical Officer of the Russian Federation of 25.09.2007 “Enactment of New Edition of Sanitary Epidemiological Rules and Regulations SanPiN 2.2.1./2.1.1.1200-03 “Sanitary Protection Zones and Sanitary Classification of Enterprises, Buildings and Other Objects”, (d) the Act N. 30 of the Chief State Medical Officer of the Russian Federation of 29.05.2007 “Approval of Sanitary Rules and Regulations SP 2.6.1.2216-07 “Sanitary Protection Zones and Radiation Control Areas. Operating Conditions and Substantiation of Boundaries”. Sanitary protection zone is a buffer zone between the operating site and the nearby residential areas. It is established for industrial facilities that emit pollutants into the atmosphere or have other environmental impacts. The purpose of the Sanitary Protection Zone is to protect nearby people from harmful industrial impacts. Sanitary rules and regulations specify class of hazards of industrial wastes (from 1 to 5), requirements to the size of sanitary protection zones (from 50 to 1000 meters and more, if necessary), substantiations for revision of these sizes, approaches and orders of their setting for specific industrial objects and/ or their complexes, limitations on the use of sanitary protection zone areas, requirements to their development and improvement, requirements for sanitary safety gaps, i.e. safe-health distance between residential areas and hazardous items (auto traffic, railways, airports, pipelines). Sanitary protection zone design is carried

out at all stages of developing urban plans, construction plans, reconstruction or updating of a specific industrial plant and productions and/ or groups of industrial plants and productions; it must also be approved by regional representatives of the Federal Supervision Agency for Customer Protection and Human Welfare.

The sanitary-protection zones are regulated in Italy too, through specific laws, that identify buffer zones and their definitions and dimensions that vary according to the potential impact on both health and environment of the considered issue. Legislative Decree n. 152/2006, a framework law on the environment, regulates all environmental assessment procedures and contains regulations for the protection of soil, water and air. In Part III, Title III, Chapter I, art. 94, it regulates the protection areas for surface water and groundwater for human consumption, delegating to the Regions the identification of safeguard areas, divided into areas of absolute protection and areas of respect; in case of absence of respect zones, the norm indicates an extension of 200 meters of radius from the point of collection or derivation. The same Decree regulates the management of waste, the reclamation of contaminated sites (Part IV), as well as air protection (Part V), indicating the limit values of atmospheric emission levels of pollutants and the requirements for plants and activities (Article 271), including installations for waste disposal.

Other specific laws regulate the safety distance of residential areas in relation to the infrastructures considered dangerous. In particular, the urban regulations must take into account buffer zones for roads (D.I. 1.04.1968 n. 1404), railways (DPR 11.07.1980 n. 753), airports (Royal Decree. 30.03.1942), setting intervals (between areas and infrastructures) included in a range that varies from 30 to 300 meters. The protection of cemetery areas is ensured by norms, that regulate the protection area in a range from

50 to 200 meters (Royal Decree 27.07.1934 n. 1265, art. 338, as modified by art. 28 of law 1.08.2002 n. 166).

In the Constitutional reform of 2001, in particular in art. 117, urban planning is considered a shared legislative competence between State and Regions, provided that the general principles imposed by the State are duly respected (23). The constitutional decision of granting some regional autonomy made it possible to the Regions to apply planning models partially different from those previously established by the State (as expressed in Law n. 1150/42), in order to ensure flexibility and effectiveness (26, 27). But Regional legislations often lack a nationwide view and maintain a superstructure of bureaucratic hierarchy in urban planning, creating loss of time and, also, much confusion (14).

Discussion and conclusions

Priorities in residential construction are given (*a*) to the adoption of new economically profitable materials, (*b*) to the construction of new residential buildings instead of those knocked down or worn out, (*c*) to a modern development of engineering infrastructures and territorial planning in residential areas. Therefore, taking into account the increased volume of residential constructions in cities and suburbs and the influence of unfavorable factors of the urban environment, we can conclude that the importance of sanitary and hygienic requirements for the construction of new buildings and the maintenance of accommodation facilities will inevitably increase. As said in the introduction, Russian Federation and Italy are two very different countries under a number of aspects such as land area, climatic zones, and other geographic and social characteristics.

All these reasons, and many others, may let us consider that a certain degree of autonomy is to be accepted and even

encouraged as a key factor for both countries, in order to ensure the best level of Public Health protection that must take into account the different geographical, climatic, social and cultural differences between the various areas and communities that compose each Country. General principles and imperative requirements must be expressed by nationwide legislation or, at least, be included in all different regional and local regulations. On the other hand, particular aspects have to be included, taking into account the demands that come from citizens, communities and local institutions (28). In the Russian Federation these issues are essentially summarized in SNiP e SanPiN, in Italy they are part of the D.M. 1975 and are provided by municipal regulations and acts. A certain level of health inequality is associated with this system in Italy, as already demonstrated by other recent studies (29).

The current system of sanitary and hygienic requirements for residential constructions and maintenance of accommodation facilities in the Russian Federation cannot be recognized as completely perfect. Primarily, it is entrusted to a too large number of authorities responsible for housing safety. It is necessary to bring into line and consolidate housing safety requirements, if not in one document, at least in a restricted list of documents. To provide the enabling environment for the population it is necessary to optimize a list of regulated values regarding the adoption of new construction materials and engineering solutions. Current approaches of sanitary and hygienic assessment of construction materials for residential buildings just partly consider conditions of their use and also demand improvements.

Urban and indoor environments represent one of the major health determinants, and a clear and updated regulatory system is a key factor to ensure Public Health protection (30, 31). Many mistakes have been done in the past regarding uncontrolled urban development, land misuse, building abuses,

unclear and often conflicting regulations, that affected several areas of the Italian territory (32).

The authors reckon that new and updated regulatory instruments for building hygiene should be developed, relying on the most recent acquisitions of international scientific literature and guaranteeing the highest standards in Public Health safeguard. In Italy the SItI (Italian Society of Hygiene, Preventive Medicine and Public Health) issued an important document to suggest minimum standards to be enforced nationwide (33). It is a key point to update and enforce, not only hygienic requirements for living areas and buildings, but a full Public Health protection, homogeneous across all the countries.

As expressed by the Authors, in large countries it is fundamental that lawmakers and policymakers take into account these problems, in order to discourage health inequalities within and across the nations.

Riassunto

Confronto tra Federazione Russa ed Italia dei requisiti igienici per l'ambiente residenziale urbano

Introduzione/scopo. La pianificazione urbana tende a contenere e regolamentare la crescita urbana consentendo uno sviluppo sostenibile a livello ambientale, sociale e sanitario. Nel presente lavoro gli autori hanno confrontato i quadri normativi della Federazione Russa e dell'Italia ponendo particolare attenzione agli aspetti urbani degli spazi abitativi.

Metodo. Considerando la ponderosa produzione normativa nei due paesi, il lavoro ha preso in esame le normative a livello nazionale per l'Italia e federale per la Russia, tenendo principalmente conto dei seguenti aspetti: strumenti di pianificazione urbana e protezione ambientale e sanitaria degli spazi abitativi.

Risultati. I problemi relativi alla sicurezza igienico-sanitaria dell'ambiente di vita in Russia sono essenzialmente riconducibili a due sistemi normativi (SNiP e SanPiN), mentre in Italia rientrano nel D.M. 05/07/1975. I principi fondamentali della pianificazione urbana in Russia sono dettati da una norma federale, mentre in Italia sono recepiti nel Piano Regolatore Generale (PRG) comunale e nei diversi regolamenti locali, dove si rias-

sume tutta la normativa sovraordinata. Gli aspetti legati alla qualità ambientale, infine, in entrambi i paesi sono disciplinati da varie leggi specifiche (federali e statali); un articolato sistema di norme che tengono conto dei potenziali impatti sulla salute e sull'ambiente

Conclusioni. Gli autori ritengono che dovrebbero essere sviluppati, specialmente in Italia che si trova nettamente più indietro da questo punto di vista, strumenti normativi chiari e aggiornati aventi per oggetto l'igiene degli edifici e degli ambienti urbani, basati sulle più recenti acquisizioni di letteratura scientifica internazionale nell'intento di garantire i più alti standard in materia di tutela della Salute Pubblica.

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Corresponding author: Dr. Lorenzo Capasso, Dipartimento di Sanità Pubblica, Medicina Sperimentale e Forense, Sezione di Igiene, Università degli Studi di Pavia, Via Forlanini CAP 27100, Pavia, Italy
e-mail: lorenzo.capasso@unipv.it