

The determinants of health

1. Environment

1.1. Atmospheric air

Atmospheric pollution is a significant problem on a local, national and international level and is one of the main man-made factors of environmental and health risk.

The main contaminants, given also their high concentration in urban air, include atmospheric particular matter (PM₁₀, PM_{2.5}), carbon monoxide (CO), nitrogen dioxide (NO₂) and ozone (O₃). PM₁₀, and PM_{2.5} are the indicator most commonly used to estimate the impact of atmospheric pollution on health and are amongst the pollutants most frequently associated with a long series of health outcomes.

In Italy, information on the status of air quality is provided by 708 monitoring stations, 411 located in urban positions, 205 in suburban areas and 92 in rural areas. Despite the high number of stations in Italy and their increase in number in recent years, certain areas are still poorly monitored.

An analysis of the data available shows that our country has a fairly steady level of atmospheric pollution, confirming the critical aspects recorded in previous years for PM₁₀, nitrogen oxides and ozone.

PM₁₀ is detected in 381 monitoring stations (83% of the total) which guarantee a minimum temporal cover of 75% useful for assessing air quality. The most stringent daily limit was respected by 52% of monitoring stations, and the annual limit value by 87% of stations.

The concentration of NO₂, detected by 87% of stations in Northern and Central Italy and by 72% of those in the South, did not raise any particular alarms. Nationwide, 33 stations exceed the 18 exceedings of the hourly concentration limit of 200 µg/m³ of pollutant permitted by the regulation. The mean annual concentration of 40 µg/m³, which constitutes the limit suggested by the regulation, is met by 71% of stations.

For O₃, 68% of the stations in Northern It-

aly exceed the information threshold (180 µg/m³), whereas in Central and Southern Italy, 31% and 25% of the stations exceed this limit, respectively. The alarm threshold (240 µg/m³ 1 h) is exceeded by 17 stations (5.7%), of which 12 in the North, 1 in the Centre of the country and 4 in the South and Islands.

As regards PM_{2.5}, whose nationwide monitoring is still limited, it will have to be extended with the entry into force of Legislative Decree 155/2010. In 2008 73% of the 51 stations that analysed concentration levels met the annual limit of 25 µg/m³ to be achieved by 1 January 2015, whereas when increased by the tolerance margin (30 µg/m³) the limit was exceeded by 5 stations.

For benzene, in 2008, the 129 measurement stations exceeded the applicable annual limit, which was 7 µg/m³, in just one urban traffic station. The 5 µg/m³ limit, which came into force on 1 January 2010, was met by 97% of the measuring stations. For sulphur oxides (SO₂) the situation was within the range nationwide, with the exception of areas at a high risk of environmental crisis in Sicily and Sardinia.

An analysis of the patterns for the “conventional” pollutants measured in the ISS station suggests that, in order to be able to achieve the limits required by law, the adoption of a strategy contemplating a series of integrated actions such as traffic regulation, the technological development of engines and fuels, the use of less polluting fuels for heating may lead to a partial improvement in quality of life.

Alongside the “conventional” pollutants, we also need to consider the importance of other contaminants, many of which are as yet not governed by national regulations, whose chemical and physical and toxicological properties make them hazardous to human health, despite the fact that they are present in the air in very low concentrations. These contaminants, known as “micropollutants” include certain metals, volatile organic compounds (VOC), aromatic polycyclic hydro-

carbons (APH), polychlorinated dibenzodioxins and furans (PCDD/F) and polychlorobiphenyls (PCB). The attention dedicated to these micropollutants has led to an increasing number of research and monitoring projects that, for some substances, have identified limits and quality targets assimilated in EU and Italian regulations. The recent Legislative Decree 155/2010 establishes target values to be met by 31 December 2012 for As, Cd, Ni, Pb and benzo[a]pyrene, taken as an APH marker, referring to the total concentration of each pollutant present in the PM₁₀ fraction of particular matter.

1.2. Indoor air

The pollution of non-industrial indoor air, particularly that in the home and environments dedicated to leisure, work (e.g. offices) and transport is a significant public health problem and has significant social and economic repercussions. Generally speaking, in confined environments pollutants are present in concentration such that, despite not determining acute effects, they are nevertheless the cause of negative effects on human wellness and health, particularly when combined with lengthy exposure times. The risk of damage to health depends on exposure, i.e. the concentration integrated by the time and susceptibility of the subjects exposed and many chronic illnesses are related to different aspects of indoor air quality.

The main conditions associated with indoor pollution are: allergic illnesses, asthma and respiratory disorders during childhood, COPD, respiratory infections (such as legionnaire's disease), lung cancer, cardiovascular disease, irritation disorders and comfort alteration (e.g. sick building syndrome). The complex blends of indoor pollutants, even at low concentrations, can over time prove to be harmful for the health of susceptible subjects: children, pregnant women, elderly people, those with asthma, and respiratory or cardiovascular conditions. In children, exposure to a number of indoor pollutants is associated with a higher risk of irritation, acute respiratory symptoms, bronchial hyper-reactivity, respirato-

ry infections and allergic sensitisation.

Exposure to environmental cigarette smoke, formaldehyde and other volatile organic compounds, either individually or in combinations, has been associated with an increase prevalence of respiratory symptoms suggestive of asthma or diagnosis of asthma in both the home and the workplace. Dust mites, the derivatives of domestic animals and certain microorganisms such as fungi and spores, represent the main sources of indoor allergens. In sensitised subjects, the inhalation of these allergens can cause a rapid inflammatory response, whereas repeated exposure over time can lead to bronchial asthma. More than half of all Italian children live in families in which at least one parent is a smoker. It is estimated that 15% of cases of asthma amongst babies and children can be attributed to their parents' smoke. The presence of damp areas and mould in the child's bedroom also increases the risk of asthmatic symptoms. A slight increase in the risk for respiratory diseases has been identified in children whose homes are heated using fuels with a high pollution potential (wood, coal, compressed gas). Lastly, a difference in the frequency of respiratory diseases has also been observed between children who live on roads used by heavy vehicles and those who live in roads away from the traffic. Those who live close to diesel exhausts are more likely to experience respiratory symptoms and asthma.

Research conducted in Italian schools in a number of European projects has identified a relationship between asthma symptoms and a number of common indoor pollutants. Reducing indoor exposure in environments occupied by children can help reduce the frequency of this illness and its evolution into other more severe forms.

For radon-induced indoor pollution, see the Radiation paragraph.

1.3. Water

During the two-year period 2009-2010 there was a further step forward in the implementation of Law 36/1994, otherwise known as the Galli Law, with the comple-

tion of the establishment of Optimum Territorial Areas and their operation. This contributed, in terms of efficiency, efficacy and cost-effectiveness to an evolution in the setup of the Integrated Water Services, constituted by a set of public services for the uptake, channelling and distribution of water for civil use and the disposal and purification of waste water.

The management of water services is currently guaranteed in Italy by stringent, consolidated practices that make it possible to supply water of a suitable quality. Moreover, the public vigilance system, which is managed by the Local Health Authority Prevention Services, is now tried and tested, perfectly functional and provides extensive and comprehensive coverage.

The results of monitoring conducted on a national level have shown a significant compliance with the requisites set forth in Legislative Decree 31/2001 concerning the water distributed, which is due to the good quality of the original resource and, in general, the correct management of the drinking water processing and distribution system.

Limit values were exceeded in a few, limited cases, mainly due to the presence of disinfection by-products (including trihalomethanes, for which, in any case, Italy has far more restrictive parameters than those indicated in the Directive), or anthropic pollutants, including nitrates and pesticides, present in the body of water of origin.

Systematic exceeding of parameter values, due partly to the introduction of significantly more stringent values with Legislative Decree 31/2001, assimilating Directive 98/83/EC, are registered in a number of geographic areas for certain parameters of geological origin, including arsenic and fluoride. The presence of these elements in water is caused by the washout of the rocks adjacent to the ground water and deeper uptakes are often naturally richer in them. At the present time, non-compliances for water naturally enhanced by mineral elements are managed according to a temporary system with Realignment Plans that are currently being implemented and fine-tuned.

With the specific intent to safely manage systematic nonconformities for chemical parameters the same Directive introduced and stringently governs the institution of the temporary system.

The use of this institution in Italy has been fundamental for managing non-conformities that can be attributed to particular geological conditions in the water table. The 2003-2009 period was characterised by massive investments in the human drinking water sector for the adaptation of significant parts of the distribution systems, the identification and redefinition of water uptake areas, pipeline renewal and adoption of generalised or local treatment systems. The actions undertaken have allowed a gradual, substantial reduction in the temporary provisions, both in terms of a reduction in parameter concentrations and of the population involved, albeit not completely.

1.4. Radiation

Exposure to radon and its decay products is a confirmed risk factor for lung cancer (Italian Cancer Research Association group 1). Specifically, the combined analysis of European studies allows us to estimate that every 100 Bq/m³ increase in radon concentration (mean over 30 years) corresponds to an approximately 16% increase in risk. Moreover, a strong interaction has been observed between radon and cigarette smoke, to the extent that the risk caused by exposure to radon is far higher (about 25 times greater) for smokers than for non-smokers. However, even for non-smokers, the increase in risk is significant. Risk also increases in a statistically significant way for prolonged exposure to medium – low concentrations of radon not exceeding 200 Bq/m³.

The National Institute for Health has estimated that every year there are 3,200 (IC 95% 1,100-5,700) lung cancer deaths attributed to radon in Italy, most of which amongst smokers, due to the interaction between radon and smoking.

These results are being used as a basis on which to develop new approaches aimed at reducing the risks connected with exposure

to radon. These approaches are no longer hinged exclusively on reducing the higher radon concentration values in homes and workplaces, but also consider justified actions (including regulatory initiatives) aimed at reducing medium and low radon concentrations taking into account also the cost-efficacy ratio.

One of the intervention strategies with the best efficacy-cost ratio consists in including in the town-planning tools (coordination plans, regulatory plans, building regulations etc.) of all the local planning and control bodies (particularly municipal authorities, the provision that new buildings are required to adopt simple, affordable construction measures aimed at reducing the entry of radon and to facilitate the installation of radon removal systems required after buildings have been built. Similar measures should be adopted for buildings subject to renovation or extraordinary maintenance work involving in a significant way the parts in contact with the ground (earthing).

Excessive exposure to ultraviolet (UV) radiation causes a number of pathological processes involving the skin (erythema, melanoma, spindle cell carcinomas and basalomas, as well as the early ageing of the skin tissues) and the eye (photokeratitis, cataract). The sun represents the most significant natural source of exposure to UV light, although in recent years there has been a significant increase in artificial ultraviolet radiation sources, such as tanning lamps. In 2009, the Italian Cancer Research Association updated its previous classification, in which sun radiation alone was included amongst the carcinogens for humans (group 1), by including in group 1 also UV A, B and C radiation as is (i.e. not merely as components of solar radiation), as well as exposure to tanning lamps and beds, which were previously considered probably carcinogenic for humans (group 2A).

The damage caused by exposure to UV radiation is documented, albeit in an incomplete or partial way only for skin cancers that are related or could be related to exposure to these kinds of radiation. The number of individuals who develop skin mela-

noma is unfortunately on the increase, although it cannot be ruled out that some cases are related to a potential over diagnosis. In Italy every year 1,500 people die of this type of skin cancer and about 7,000 people are diagnosed for the first time. Istat data shows that melanoma mortality increases by about 1-2% a year and that incidence increases by approximately 10% a year.

It is essential to provide information on the correct durations of exposure to sunlight considering one's phenotype characteristics and on the characteristics of sun screens. As regards occupational prevention, exposure to sunlight must be considered a risk for outdoor workers.

There is a widespread concern in the public relating to the potentially harmful effects of exposure to electromagnetic fields both at extremely low frequencies (ELF, e.g. the 50 Hz frequency of electrical current) and at higher frequencies (radiofrequencies, RF). A possible carcinogenic role of ELF magnetic fields has been suggested in connection with infantile leukaemia only. For this illness, a number of epidemiological studies have indicated statistically significant associations. For infantile tumours other than leukaemia and for tumours in adults, the scientific evidence postulating an association with exposure to ELF magnetic fields is far weaker. The same can be said of conditions such as depression, suicide, cardiovascular diseases, reproductive problems, developmental diseases, immunological modification, neurobehavioural effects and degenerative neurological conditions.

As regards RF, the various epidemiological studies conducted have not yielded convincing evidence of an increase in cancer risk.

1.5. Noise

As regards the effects on health, tabulated and non-tabulated noise-induced hearing loss is amongst the technology-induced disorders most frequently reported to INAIL. Excessive exposure to noise does not merely cause hearing damage, but also signifi-

cant extra-auditory damage: for example, increasing evidence shows an association between the exposure to road and air traffic and hypertension and ischaemic heart disease, effects on learning abilities and memorising. Sleep disorders are amongst the problems reported as complication of exposure to noise and they have the greatest impact on health and quality of life. A special mention should be made for night-clubs, where the limit established by Prime Minister's Cabinet Decree 215/1999 for noise is 95 dB. The most recent survey on this topic, performed in 2008 by ISPESL, showed that the legal exposure thresholds are significantly exceeded for both night-club clients and workers. Epidemiological data should provide indications for town planning, for example on the location of schools or places used by children, considering also the effects noise has on learning in school age children.

1.6. Waste

The collection, transportation, handling and disposal of waste takes place following a multitude of procedures that can cause different types of impacts on the environment (on both local and systemic levels) and, potentially, on human health, depending on the toxicological profile of the chemical agents emitted or released, biological risk, the types of exposure (by inhalation, ingestion by means of food chain contamination, contact with skin) and the varying vulnerability of the populations exposed.

The health effects of the waste cycle are currently the subject of scientific research and international and EU assessment. Although there are no confirmed causal nexuses, in decision making processes concerning waste management, the adoption of preventive criteria is justified.

The management of waste in complex terms calls for the adoption of an integrated approach that satisfies the priorities identified by the so-called refuse hierarchy, developed by the European Union, which establishes the preferred options for disposal (European Council Directive 75/442/EEC of 15 July 1975 on waste). By applying

this hierarchy, the options in order of decreasing preference are: restriction in production, reuse, recycling, composting, incineration and energy recovery landfills, incinerations and no energy-recovery landfills. The decision-making processes relating to policies in the management of the waste cycle must take into account these indications, including an assessment of the impact on health, in particular when choosing the type of plant to be built.

Environmental monitoring plans on the various matrices are also necessary, including the food chain, close to sites, in order to verify their correct operation and to confirm that the population is not exposed to pollutants that are potentially harmful to health, nor that it is subject to exposure that, despite not being harmful, can have a negative influence on quality of life (e.g. unpleasant odours).

In order to assess the sites' potential effect on health, epidemiological surveys should be performed on the populations living nearby, also promoting partnership and procedure-sharing networks.

1.7. Climate

Adverse meteorological events have undergone a significant increase in the past twenty years, not merely in terms of number, but also in intensity. The effects can be particularly devastating when they affect groups of populations who are in themselves vulnerable such as children, the elderly, disabled, the poor and ethnic minorities.

Epidemiological studies conducted in Europe and Italy have shown that heat waves have a significant impact on the health of the population residing in urban areas. The effect of high temperatures on mortality is relatively immediate with a latency normally of just 1-3 days between a rapid rise in temperature and a subsequent increase in the number of deaths. During heat waves it has been observed that urban populations are not affected in a homogeneous way: the population subgroups at greatest risk are people over 65 (75-84 years) and the very elderly (+84 years) with chronic ill-

nesses, those who live in conditions of social isolation and those living in socially and economically disadvantaged areas. In Italy, two national surveillance and prevention projects are on-going, funded by the Department of Civil Protection (DPC) and the Ministry of Health/CCM:

- the DPC project “National surveillance, forecasting and alarm system for the prevention of heat waves on the population’s health”;
- the Ministry/CCM project “National operative plan for the prevention of the effects of heat on health”.

1.8. Remediation Sites of National Interest – SNI

The presence of contaminated sites is significant and documented in Europe and Italy. In the Member States of the European Environment Agency (EEA) there are approximately 250,000 sites awaiting remediation, thousands of which in Italy, and 57 of which are defined “remediation sites of national interest” (SNI) due to the degree of environmental contamination, the health risk and the social alarm (Ministerial Decree 471/1999). The 57 sites of the “National Remediation Programme” includes unused industrial areas, industrial areas being reconverted, industrial areas still being used, areas that in the past were the site of accidents in which chemical pollutants were leaked and areas subject to uncontrolled disposal of waste, including hazardous waste. In these sites exposure to contaminating substances can occur through occupational exposure, industrial emissions and, ultimately, contaminated soil and groundwater.

In Italy, the impact on health of polluted sites has been the subject of geographical epidemiological studies in the areas at risk of national territory or of individual Regions, such as Sardinia. In Italy, in addition to epidemiological studies, there has been a methodological reflexion in the topic of the state of health of populations residing in the polluted sites (ISTISAN Report 07/50). The scientific and institutional interest in this issue is demonstrated by the funding

set aside, as part of the Strategic Environmental and Health Programme (Ministry of Health – Specific Research 2006, pursuant to article 12 of Legislative Decree 502/1992) of the SENTIERI (National Epidemiological Study of the Territories and Sites Exposed to Risks from Pollution) Project. This Project, which started in 2007, includes an analysis of mortality amongst the residents of 44 of the 57 SNI (those for which the analysis of mortality on a municipal level was deemed to be appropriate). A key part of the Project is the evaluation of epidemiological evidence on the causal association between the specific causes of death and environmental exposure published in 2010.

SENTIERI has investigated approximately 400,000 deaths concerning a total population of about 5,500,000 inhabitants. There is a great variation between the sites examined as regards the size of the population, characteristics of environmental contamination, presence of specific production facilities and other sources of environmental pressure, status of the remediation work and industrial redevelopment.

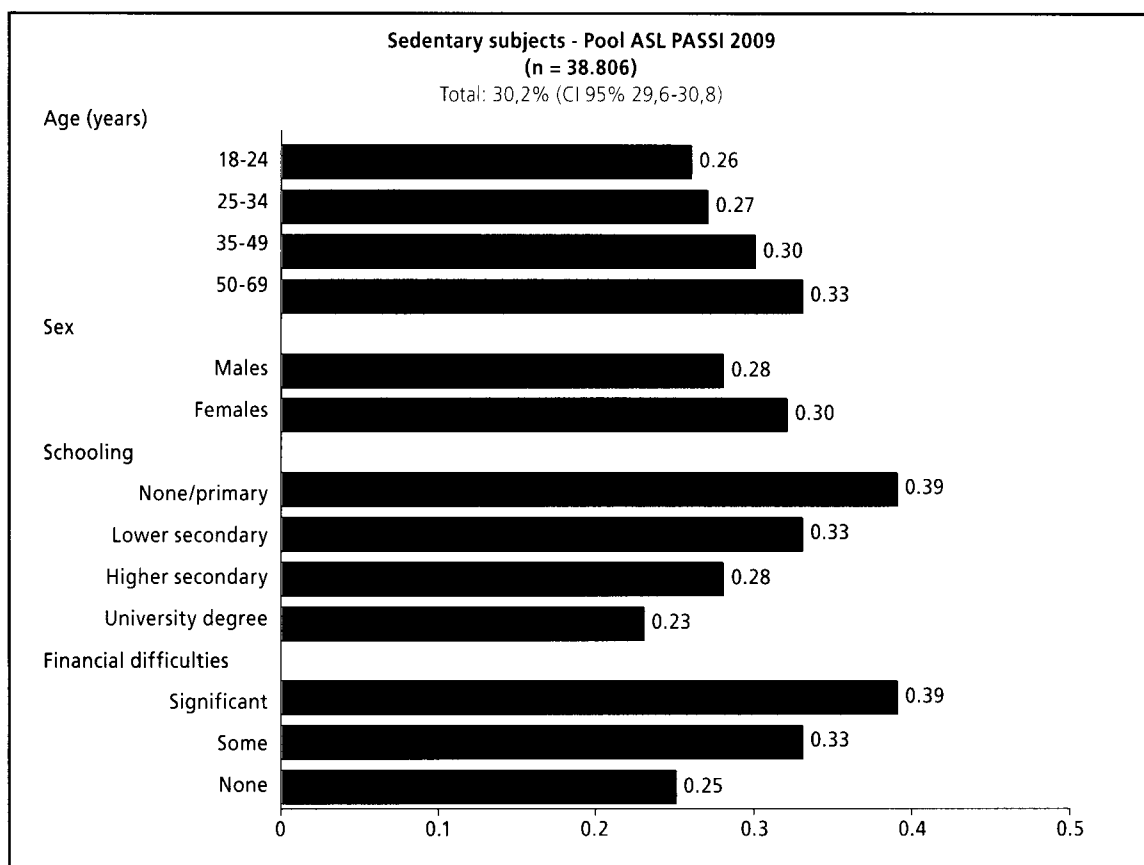
The mortality situation too is diversified. The all-cause and all-cancer mortality exceeded the mean values for the Regions involved in 24 out of 28 sites.

The scientific persuasiveness in the causal nexuses between environmental exposure and the causes of death considered in the SENTIERI Project was considered to be adequate for the onset of pleural mesothelioma in sites contaminated with asbestos and as limited or inadequate for the other associations considered.

2. Life styles

2.1. Exercise

Physical exercise occupies fourth place amongst the main causes of death for chronic diseases, such as heart disorders, stroke, diabetes and cancer, contributing to over 3 million avoidable deaths per year worldwide. The increase in infantile and adult obesity levels is also connected to the lack of physical exercise.

Figure. Characteristics of sedentary subjects.

Source: Report PASSI 2009.

Exercise is beneficial to people of all ages: in children it promotes harmonious physical development and favours the development of social skills, whereas in adults it reduces the risk of chronic diseases and improves mental health. For the elderly, the benefits concern a reduction in the risk of falls and fractures and protection from ageing-related diseases. The beneficial effects do not merely concern the prevention or slowdown in the progression of chronic diseases, but also an improvement in general psychological and physical wellness, muscle tone and quality of life.

According to data published by Istat in 2010, 22% of the population (above the age of 3 years) declares that it practices one or more sports regularly, whereas 10.2% practise one sporadically. On the other hand, 28.2% of people, despite not practising a sport, said that they do some physical exercise, such as walking for at least 2 kilo-

metres, swimming or cycling. The percentage of sedentary subjects, those who do not do any exercise or practise a sport in their free time, is 38.3% (which rises to 42.8% amongst women). The data for 2009 collected by "PASSI" (Progress made by Healthcare Authorities for Health in Italy) an on-going system for the surveillance of the adult Italian population on the main behavioural risk factors, confirms that the percentage of completely sedentary people increases with age, amongst women and those with a lower degree of education. There was also a greater component of sedentary subjects amongst those who claim to have financial problems. Amongst those who do little sport there are statistically significant differences between regions, with a South - North differential. The lowest value is recorded in the Autonomous Province of Bolzano (13%) and the highest in Basilicata (47%).

The “OKkio alla Salute” data collected in 2010, from children in the third year at primary school, is more or less consistent with the data collected in the previous 2008 survey and suggest that of a total of over 40,000 schoolchildren, 22% practice a sport for no more than one hour a week and 18% had not done any exercise the day before the survey. About half of these children have a television in their bedroom, 38% watch television or play video games for 3 or more hours a day and only 1 in 4 children go to school on foot or by bicycle. Only 43% of mothers whose children do little exercise believe that their children should exercise more and 34% of classes do less than two hours of physical exercise a week.

2.2. Smoking

In Italy it is estimated that cigarette smoke is responsible for between 70,000 and 83,000 deaths a year, with over 25% of these deaths occurring between the age of 35 and 65 years.

According to ISTAT data, in 2010, the percentage of smokers, which has changed little in recent years, was 22.8% (males 29.2%, females 16.9%), slightly lower than in 2009. In 2003, before the introduction of Law 3/2003, the prevalence was 23.8% (males 31.0%, females 17.4%).

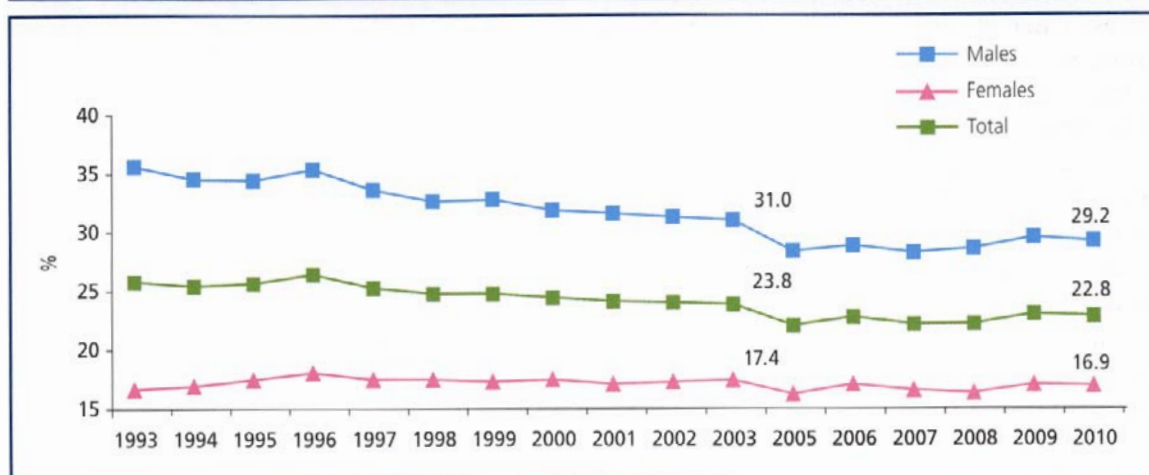
The highest prevalence is amongst young

adults aged between 25 and 34 years, with a value equal to 32.3% (39.7% amongst males and 24.4% amongst females), higher than the previous year. The prevalence amongst young people aged between 15 and 24, however remained steady, at 21.5% (27.4% males and 15.5% females).

According to a study conducted by the Institute for the Study and Prevention of Cancer (ISPO), in association with Istat, during the period 1986-1993, the mean reduction in the prevalence of smoking in Italy was 2% per year in both sexes, whereas in 1993-1999 it was 1.3% a year in men. For the same period, on the other hand, there was a 0.7% a year increase amongst women. Lastly, in the period 2000-2009, prevalence continued to fall amongst men at a rate of 0.9% a year, to reach 29.5% in 2009. Since 2000, the prevalence amongst women has been approximately 17%. According to the study, the reduction in prevalence can be in part attributed to the smoking control policies implemented in recent years, such as price increases, bans on cigarette advertising and smoking in public places and the development of a network of anti-smoking centres.

According to the most recent DOXA survey (2010), the percentage of ex-smokers, those who had tried to give up and succeeded, rose compared to the previous year from 17.5% to 18.4%. It is estimated that

Figure. Prevalence of smokers by sex (Years 1993-2010).



Source: Istat – Italian Statistical Yearbook – Year 2010.

more than 560,000 smokers stopped smoking in the past year.

As regards the effect on health of the ban on smoking in all places open to the public introduced with Law 3/2003, numerous scientific studies are consolidating evidence on the efficacy of smoking bans on the patterns of hospital admissions for myocardial infarction. One study, the result of a partnership between the Ministry of Health and the University of Turin, has analysed about one million hospital admissions for acute coronary events taking place in the Italian population between 2002 and 2006. In the two years following the introduction of the law, there was a 4% drop in the number of hospital admissions for acute coronary events amongst people under 70. This effect appears to stabilise over time and to be homogeneous for the various geographical areas of the country. A significant part of this decrease can be attributed to the drop in exposure to passive smoking in public places.

2.3. Diet

A correct diet plays a key role in the prevention of many chronic degenerative conditions and obesity, which is, in itself, a risk factor for the development of cardiovascular illnesses, tumours and diabetes. Overweight children have a greater probability of being so also in adult life. This reduces the mean age of onset of chronic, non-transmissible disease and significantly affects the burden carried by the health services, since it increases the number of admissions and medical services required in adult life.

The data collected by “OKkio alla Salute” 2010 indicated a widespread diffusion, amongst children, of dietary habits that do not favour harmonious growth and make them prone to weight gain, particularly when concomitant, thus substantially confirming the data of the previous survey, conducted in 2008. Specifically, it came to light that, of a total of over 40,000 schoolchildren, 9% of children skip breakfast and 30% have an inadequate breakfast (i.e. one that is unbalanced as regards carbohy-

drates and proteins) and 68% have too large a mid-morning snack; 23% of parents say that their children do not eat fruit and vegetables every day and 48% of children drink sweetened and/or fizzy drinks every day.

The PASSI 2009 project confirms that just 9% of those interviewed eats 5 portions of fruit and vegetables a day, with a higher percentage amongst women, in the older age ranges (50-69 years) and amongst people with a higher level of schooling. As regards geographical distribution, Basilicata has the lowest “five a day” rate (6%) and Friuli Venezia Giulia and the local health authorities of Sardinia have the highest (17%).

2.4. Alcohol consumption

Scientific literature continues to confirm the relationship between alcohol consumption in the population and the risk of morbidity and mortality for gastrointestinal, cardiovascular, pulmonary, tumours and skeletal and muscular diseases, as well as immunological and prenatal damage. Being a psychoactive substance, alcohol can have significant psychosocial repercussions, not only for the drinker, but also his or her family and the community as a whole.

In 2008, the Ministry of Health put the number of hospital diagnoses for completely alcohol-related conditions at 91,735, of which 70,712 for males (77.1%) and 21,023 for females (22.9%). The hospitalisation rate for this diagnosis calculated in 2008 was 137 per 100,000 and confirms the downward trend on a nationwide level until 2002.

An analysis by gender and age group shows that hospital admission diagnoses continue to primarily concern the male population over 55. The main diagnosis is for alcoholic hepatic cirrhosis (35%), followed immediately by alcohol dependency syndrome (28.7%).

Accidental causes of death, particularly road accidents, also present a high number of alcohol-related losses of life, particularly for young people aged 25-29 years, amongst

who the highest number of road accident deaths is recorded. In 2008, drunkenness represented 2.12% of all confirmed or presumed causes of road accidents (2.09% higher than the value recorded in 2007), with 5,920 cases (6,124 in 2007). This value is also underestimated and the National Institute for Health estimates alcohol-related road accidents to be 30-40% of all accidents.

As regards alcohol dependency, in 2008 some 66,548 subjects were treated in community alcohol abuse services, of whom 51,491 males and 15,057 females, confirming the upward trend amongst this latter category, even for young women under 30 years of age.

In the past decade, there has been a strong increase in the concomitant use of drugs amongst alcohol counselling service users (from 5.7% in 1996 to 10% in 2008).

2.5. Drug and psychotropic agent abuse

The analyses of drug abuse in Italy have been performed using different and independent sources of data, in order to estimate the phenomenon as correctly as possible from a number of points of view. The total number of consumers (including both occasional and daily users/addicts) is estimated at around 2,924,500.

The percentages of people who in the general population contacted (a sample of 12,323 subjects aged 15-64) claimed to have used drugs at least once in their lives were: 1.29% for heroin, 4.8% for cocaine, 22.4% for cannabis, 2.8% for stimulants/amphetamines/ecstasy and 1.9% for hallucinogenic substances.

These percentages change in the student population contacted (a sample of 34,738 subjects aged 15 to 19) and are: 1.2% for heroin, 4.1% for cocaine and 22.3% for cannabis, 4.7% for stimulants/ amphetamines/ ecstasy and 3.5% for hallucinogenic agents.

These figures highlight a general drop in consumption, particularly in the occasional use group. The tendency towards poly-consumption persists, and there is a particularly strong association between alcohol

(oscillating between 91.2% and 79.2%) and cannabis (which varies from 64.0% to 54.2%) and the various other substances.

There are 393,490 subjects with substance dependency (drug addicts requiring treatment) representing 9.95/1000 inhabitants aged between 15 and 64. Of these, 216,000 were for substances containing opium (5.5/1000 inhabitants) and 178,000 for cocaine (4.5/1000 inhabitants).

In recent years there has been an increasingly marked shift in the supply of illicit substances sold over the Internet. In relation to this, the DPA's National Alert System has identified a series of very dangerous new substances present also in Italy and, through the Ministry of Health, it has introduced suitable forms of prevention and control. In particular, a number of synthetic cannabinoids (JWH018, JWH073, JWH200) and other substances such as mephedrone have been identified. This undoubtedly constitutes a new reality to be taken into serious consideration and on the basis of which strategies and specific projects have been put into practice to prevent and control their use, in order to protect the younger generations, who have a strong inclination to use computer technology and are therefore more exposed to "drug risks" present also on the Internet.

3. Socioeconomic determinants

After age, socioeconomic determinants are the single most important determinant of differences in a population's health. Social determinants influence the distribution of the main health risk factors, material, environmental, psychosocial factors, unhealthy lifestyles and, in many cases also access to appropriate treatment, which are proximal determinants and can be partly changed by suitable policy.

In Italy, inequalities still exist in mortality and health indicators to the detriment of a number of dimensions of social disadvantage. In contrast with the inequalities regarding mortality which, albeit in the "Longitudinal Turin-based Study", appear to decrease over time, differences in health and chronic illness would appear to remain sta-

ble, with the exception of mental health, where inequalities are on the increase. At equal individual social conditions, the South of Italy presents significant yet modest disadvantages in physical health indicators.

The European Union's Employment, Social Policy, Health and Consumer Affairs Council (EPSCO), with its resolution on 20 May 2010, acknowledges the commitments of the various countries and highlights the need to take action against inequalities in health, with a wide-reaching protective approach, involving not only health policy, but all policy (*Health in All Policies*).

In March 2010, the European Commission included the issues of social inclusion and attention to social determinants of health in its seventh main initiative of the new European strategy ("Europe 2020"), dedicated to building a common platform to fight poverty.

The European Parliament's resolution of 8 March 2011 positively accepts the Commission's Resolution, and invites the European Union and the individual Member States to follow it up with their own actions and with tailor-made programmes (European Parliament, 2011).

The Italian National Health Service is prepared to face the challenges of solidarity in health put forward by the European Union. The Italian law with which the NHS was

established defines its assignment to protect health as a "set of functions, facilities, services and activities destined for the promotion, maintenance and recovery of the physical and mental health of the whole population, without discrimination between individual or social conditions and according to procedures that guarantee the citizens' equality in relation to the service" (Law 833/1978 article 1).

In order to translate these principles into concrete actions that contrast and moderate, it is essential that all the NHS mechanisms measure up to this challenge, including those that can influence the need and demand for health, those that can direct the supply of treatments and those used to allocate resources. We need to define these objectives and give them a more explicit place on the agenda for policies and actions aimed at managing the demand, supply, funding and allocation of resources. This must also take into consideration the negative effects on health of the current unfavourable economic situation and other indicators, such as difficult to control migratory phenomena, the collapse of the prison system, the impact of ageing, the difficulties in the definition of federalism, etc., all factors that could worsen the situations of inequality in the near future and the generations to come.

The current responses of the National Health Service

1. Measures for the protection and promotion of health and the prevention of disease

1.1. Health of imported food products

Together with the Border Inspection Stations (BISs) located in other EU Member States, BISs in Italy perform tests on batches of animal products and feed imported from non-EU countries and destined for the whole of the EU. In 2009, Italy's BISs were presented with 63,706 batches of animals, products of animal origin and feed originating from over 100 non-EU countries, 9.3% less than the previous year. In addition to these 10,054 batches were imported through other EU BISs, for an overall total of 73,760 batches.

If we consider that in 2009 a total of 1,196,549 batches of animals and products of animal origin were imported into Italy from other EU countries, those imported from non-EU nations account for a mere 5% of the total. Systematic checks are conducted on every batch of these goods, in order to make sure that the documentation and identity of the product is correct. The frequency of the veterinary inspections carried out on products of animal origin depends on the type of product and the country of origin, pursuant to EU regulations. In 2009, laboratory checks were conducted on a mean of 9.5% of the total batches undergoing physical and material inspections, which was slightly higher than the percentage inspected in 2008 (9.2%).

In order to harmonise and rationalise the testing performed nationwide and guarantee homogeneous checks by all Italian BISs, the following were devised:

- the national monitoring plan for the testing of residues on food products of animal origin imported from non-EU countries;
- the National monitoring plan for the testing of microorganisms, their toxins and metabolites on food products of animal origin imported from non-EU countries.

On the basis of the monitoring plans indicated above, the BISs performed a total of 9,514 analyses, of which 7,772 for chemical risks (residues, hormones, antibiotics, inhibiting substances, environmental contaminants, etc.) and 1,742 analyses for biological risks.

The laboratory analyses primarily involved the following categories of product:

- meat and derivatives (1,062 analyses);
- fish products (8,077 analyses);
- milk, eggs and honey (335 analyses).

In all there were 51 positive batches.

In 2009, 349 batches of goods were rejected, equal to approximately 0.5% of those presented for importation, a slightly lower percentage than recorded in 2008 (0.6%).

Measures to prevent illegal importation implemented at all border crossing points in Italy resulted in the confiscation, in 2009, of 4,590 items of illegal products of animal origin: approximately 9,988 kg of meat and about 9,692 kg of milk transported in the car boots of passengers travelling from non-EU countries or sent by private individuals. The main non-EU countries of origin for these confiscated goods were: China, Albania, Nigeria, Morocco and Egypt.

Veterinary EU Compliance Offices (UVAC) are satellite Ministry of Health stations established following the abolition of border controls between EU Member States with the advent of the Common Market and they are responsible for checks at destination of all goods originating from within the EU on a national level.

In 2009, these offices handled 1,196,549 batches of animals, food products of animal origin and other products of animal origin not destined for human destination (+13.06% compared to 2008), almost thirteen times greater than the number of batches imported from non-EU countries. Some 35.9% of these batches involved fish products (429,003 batches), 29% meat (347,402 batches), 25.3% milk, derivatives and other products of animal origin des-

tined for human consumption (302.634), 6% were live animals (71,578 batches) and 3.8% other animal products not destined for human consumption (45,932 batches). In 2009, documental and physical inspections were performed on 9,567 batches, equal to 0.8% of the batches introduced for EU countries and 3,085 laboratory tests were performed.

The veterinary inspections on live animals and food products of animal origin in 2009 led to the identification of 134 non-compliant batches that, considering the total number of batches inspected was 9,567, translates into a rejection rate of 1.4%, exactly the same as recorded in 2008 (1.4%).

A consistent part of the unfavourable findings was due to the presence of mercury (25) and *Listeria monocytogenes* (8) in processed fish, cadmium (22) in shellfish and salmonella (6) in meat products.

Some Veterinary EU Compliance Offices work directly, in concert with the Highway Police and Health-related Division of the Italian *Carabinieri* or with the Forestry corps, performing animal welfare inspections during road transportation.

Non-animal food products imported from non-EU countries must meet the hygiene and health standards set forth in applicable provisions governing food products in Italy and the EU in general. Given the many different types of plant food products available, the hygiene and health tests performed can concern microbiological, physical and chemical aspects.

The global increase in the flow of goods has led to an increase in the testing performed on non-animal food products and materials destined for contact with them by the Ministry of Health's Maritime, Air and Border Health Offices (USMAF) over just a few years and now constitutes a considerable part of the activities performed by these satellite Offices, which play a key role in the protection of Italian and EU citizens' health.

The work performed by these offices makes it possible to inspect the foodstuffs and materials in contact with them before they are nationalised and distributed within the

country, thereby guaranteeing a significant filter activity that, in cases of non-conformity, makes it possible to reject the whole batch, before it is broken up and is able to reach Italian and European consumers.

The USMAFs are distributed homogeneously over Italy, in the main ports and airports.

On average, every year the USMAFs perform more than 120,000 official inspections on foods and the materials that come into contact with them, of which 100% involves documental checks, 9-10% inspections and 5-6% product samples. The average rejection rate is expected to be less than 1%.

More specifically, almost 86,000 batches of non-animal food products originating from non-EU countries were presented for importation (+5% compared to 2009). All these batches underwent documental controls in compliance with routine procedures, whereas 6,654 were subject to inspection (7.7%) and 4,274 samples were taken for laboratory tests (5%). There were 175 cases of rejection (0.2%).

As far as the materials in contact with foodstuffs are concerned, in 2010, official checks were performed on 37,613 batches (+50% than in 2009).

The efficacy of the Italian network of checks performed at borders on food products of non-animal origin and materials in contact with them was also recently confirmed by an inspection performed by the European Commission's Food and Veterinary Office.

As part of the "Better Training for Safer Food" initiative, DG SANCO assigned our country the organisation of the course "Best practices on increased level of official controls on certain feed and food of non-animal origin", during which 150 EU inspectors were trained in line with the recent European regulations on the increased levels of control.

A programme is currently being conducted for the on-going improvement in official control activities on foods of non-animal origin and materials coming into contact with foods performed by the USMAFs.

1.2. Nutrition and special diets

Nutritional status contributes to the quality of life of all individuals and an incorrect diet constitutes an important risk factor for a great many medical conditions. To facilitate the adoption of wholesome lifestyles, agreements have been stipulated and specific actions adopted to target high-risk population groups such as children, those with coeliac's disease and hospital inpatients.

Important initiatives have been undertaken to promote breastfeeding and to oversee the correct marketing of artificial milk.

In Italy, the number of subjects with a confirmed diagnosis of coeliac's disease in 2009 was approximately 110,000, almost double the figure recorded in 2007, whereas it is estimated that the actual number is around 600,000. The complete and permanent exclusion of gluten-containing cereals from the diet is the only effective therapy for avoiding the onset of symptoms, allowing remission and preventing the development of complications. Allowing these subjects to consume a gluten-free meal called for the undertaking of a series of initiatives involving the kitchens of schools, hospitals and care institutions, as well as the canteens of Public Administrations.

"National guidelines for school dinners" have been drawn up and were approved during the Central State – Regional Authority Conference of 29 April 2010. The guidelines provide indications on how to organise and manage the school dinner service, define the specifications for the calls for tenders and provide a meal that suits the requirements of the different age ranges, thereby teaching children how to acquire correct eating habits.

In addition to these, "National guidelines for hospital and care setting meals" were published, whose cornerstones are the central role played by the hospitalised patient and the respect for his/her specific nutritional needs.

In the case of special food products subject to mandatory reporting to the Ministry of Health, for example, dietary, special medical and gluten-free products, formulae for

feeding babies up to the age of 6 months, foods supplemented with vitamins, minerals and certain other substances, the verification and monitoring activities are performed directly by the Ministry. In the period 2009-2010, it received approximately 11,000 new reports and 7,000 re-examination applications and in the same two-year period approximately 150 manufacturing and packaging authorisations were issued. In 2009, in its capacity as central competent authority, the Ministry was visited by the Food and Veterinary Office (FVO) division of the Directorate General for Health and Consumer Policy (DGSANCO), in order to confirm the adequacy of the official tests performed on baby foods. The inspection's final report, which is available from the European Commission's website, emphasised the high level of protection guaranteed by the Italian authorities in this sector.

The Ministry actively follows the evolution of EU regulations in the sectors the above-named products belong to, thereby supporting the positions and criteria defined on a national level. As part of these activities, it has also followed the issue concerning the definition of the maximum levels of vitamins and minerals permitted in foods and the review of the regulation on novel foods (foods or food ingredients that do not have a lengthy history of consumption in Europe).

1.3. Safety in living environments

A safe (or unsafe) living environment depends on the decisions taken by the many actors, often independent of the Healthcare System, that govern the various different aspects of the designing, construction, use and management of homes, public buildings and urban settlements; actors that need to be involved, informed and made responsible, as their choices can contribute to guaranteeing the population's health and wellness, as part of a vision of sustainable development.

The high number of chemical substances present in the environment or in foodstuffs generates concern, given the knowledge we

have acquired of the potential damage they can cause to the environment and human health, particularly that of children.

In most industrialised countries, violence and accidents constitute a severe public health problem, on account of the high number of human lives lost and the high medical, social and economic costs.

Since the late 1980s, great progress has been made in Italy in reducing the number of accidents, which nevertheless still represent the leading cause of death in the 0-19 years age range and are responsible for 24% of all deaths in youngsters (over 1,000 deaths in 2003). In Europe, accidents are the main cause of death in the paediatric population. A child under 5 years of age is at an at least 5 times greater risk of being hospitalised following a domestic accident than an adult. For an elderly person aged over 75, this risk increases at least tenfold. Closely connected to domestic accidents is domestic violence, which is considered a primary public health concern worldwide and represents the most frequent case of fundamental human rights violation. It is at home, within the family context that women, sometimes even when they are pregnant, are most frequently maltreated, primarily by their husband or partner. Children exposed to episodes of violence at home are more likely to exercise active forms of bullying on their schoolmates or be the victims of bullying themselves.

International standards for the detection of domestic violence are still lacking and Italy, together with Finland and Spain, is one of the European countries that have conducted a large-scale survey on this issue. The results of the 2008 Istat survey indicate that there are almost 7 million women, aged between 16 and 70, who have suffered physical or sexual violence in their lives and 900,000 have been victims to blackmail at work. This phenomenon, like rape, is greatly underestimated. As far as child abuse is concerned, once again most cases of abuse take place at home, within the family. The data available concerning violence against the elderly shows that the phenomenon continues to grow worldwide

and primarily concerns the over-80s. International standards for the detection of domestic violence are still lacking and Italy, together with Finland and Spain, has conducted a large-scale survey on this issue.

Even outside the home, worldwide violence is an important cause of death and permanent disability, particularly amongst the young. Policies for a reduction in environmental, structural and behavioural risk factors and the promotion of protective factors (good social opportunities, self-confidence, interest in studies, strong ties with the family and parents, social support and better awareness in society) can reduce the cases of violence amongst youngsters.

Despite the good results achieved in Italy in recent years, road, occupational and domestic accidents still constitute the main cause of death amongst young adults.

As far as the adoption of specific national policies is concerned, Italy has announced that it has altogether implemented 85% of the efficacious measures identified by the WHO Europe Region for the prevention of accidents and 100% of the actions identified for preventing violence. Further investments are required in the prevention sector in order to develop national policies aimed at implementing safety in living environments and reducing social and economic inequalities.

1.4. Occupational safety and health

INAIL data for 2009 confirms that the overall accident rate continues to follow a constant downward trend, in an occupational setting that in the same year also saw a reduction in the total number of people in employment, equal to -1,6%, and in the number of hours worked, due to a massive use of employment benefit schemes.

Off-the-premise and road accidents still occupy first place.

As far as occupational illnesses are concerned, although the data shows an increase in illness reports, which rose during the year by about 16%, particularly in the agricultural sector, they are still, overall, greatly underestimated.

In order to deal better with the unaccept-

able situation concerning occupational deaths and disabilities, the Ministry of Health took concrete action for the assimilation in the 2009-2010 two-year period, of the implementation decrees envisaged by Legislative Decree 81/2008. Within the initiatives undertaken to protect and promote safety in the workplace, a particularly significant commitment has been made to achieve in certain particularly high-risk sectors, such as the construction and agriculture sectors, the National plan for the prevention of accidents on worksites and the National Plan for the prevention of accidents in Agriculture, in line with the “Treaty for the Protection of Occupational Safety and Health”, containing the general strategic guidelines for the prevention activities to be undertaken in priority areas for the protection of health in the workplace.

The indications for programming also included the increased deployment and continuing training of local health authority staff, to meet local requirements concerning the relationship between productive and occupational facilities, the risks present and epidemiological data on damage to worker health.

1.5. Safety of medicinal products

In order to guarantee the quality and safety of the medicinal products registered in Italy, AIFA (Italian Medicines Agency) monitors medicinal products throughout their lifecycle, from inspections on clinical trials to those in the various production sites, the finished products and the active pharmaceutical ingredients. The Agency also performs checks on the dossiers presented by pharmaceutical companies to obtain marketing authorisation in Italy and the swift adoption of precautionary measures to protect public health, whenever necessary.

In 2009-2010, the Good Clinical Practice (GCP) inspections performed during trials saw an increase in the absolute number of inspections performed (from 43 in 2008 to 112 in 2009 and 137 in 2010), thanks to the adoption of a new approach involving remote documental checks.

The sites that manufacture proprietary medicines, the active pharmaceutical ingredients (API), medical gases and medicinal products for advanced therapies, are all subject to authorisation by AIFA, which is also responsible for the periodical inspection programme for the verification of conformity with the standards of good manufacturing practice (GMP). Production sites are also subject to verification inspections whenever any change is made to the conditions under which authorisation was obtained. The importation of APIs is also subject to authorisation by AIFA. During 2009 and 2010, the Agency identifies unauthorised importation activities, resulting in the confiscation by the Division of the Italian *Carabinieri* specialised in health-related matters of the illegally imported API and official reports being filed with the public prosecutor's office.

The guarantee of the safety, quality and efficacy requisites of the medicinal products that receive marketing authorisation (MA) is guaranteed by the thorough evaluation of the chemical and pharmaceutical, pharmacological and toxicological and clinical aspects described in the registration dossier that the applicant pharmaceutical companies submit to AIFA. Verification activities begin when the first marketing authorisation is presented and continue for the whole of the medicinal product's lifecycle.

In order to highlight, by means of the submission of analytical and investigational test reports, the presence of any harmful or undesirable toxic effects at the conditions envisaged for human use, Legislative Decree 219/2006, together with the European guidelines governing the sector, provides detailed indications of the information to be provided for the medicinal products containing active chemical and biological substances.

National and EU regulations establish the actions to be undertaken by the regulatory authorities whenever defects are identified in the quality of medicinal products available on the market. AIFA performs these functions by managing market call-backs and batch seizures, medicinal product shortages, State checks and MA withdrawals.