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**Development of Environmental Health
Indicators for EU Countries**

Pilot study results from the Netherlands

A.J.P. van Overveld, B.A.M. Staatsen

Contact:

Annemiek van Overveld

Centre for Environmental Health Research

Annemiek.van.overveld@rivm.nl

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RIVM, P.O. Box 1, 3720 BA Bilthoven, telephone: +31 - 30 - 274 91 11; telefax: +31 - 30 - 274 29 71

Abstract

Development of Environmental Health Indicators for EU Countries

Within the framework of the National Environment and Health Action Plan (NEHAP), the Netherlands is working on a national environment and health information system. One of the purposes of the system is to facilitate evaluations of (environment and health) policies and for geographical comparisons in the field of environment and health. WHO is also developing an Environment and Health Information System at the European level. The pilot study described here is part of this implementation process. Environment and health indicators, covering air quality, noise, housing, traffic accidents, water and sanitation, chemical emergencies and radiation were tested on availability, quality, comparability and policy-relevance in 11 European countries, including the Netherlands. Results in the Netherlands show that reliable and complete information is available on almost all of the selected indicators.

On the basis of the international results of the pilot study, indicators have been selected for which the actual data will be collected in a follow-up project. These indicators will be part of the Dutch information system.

Key words: environment; health; indicators; information system

Het rapport in het kort

Ontwikkeling van Milieu Gezondheid Indicatoren voor EU-landen

In kader van het Actieprogramma Gezondheid en Milieu wordt in Nederland gewerkt aan een nationaal milieu en gezondheid informatiesysteem. Doel van het systeem is o.a. het evalueren van (milieu-gezondheids)beleid en het vergemakkelijken van geografische vergelijkingen op het gebied van milieu en gezondheid. Op Europees niveau is de WHO ook bezig met de ontwikkeling van een milieu en gezondheid informatiesysteem. Deze pilotstudie is onderdeel van dat ontwikkelingsproces. Milieu en gezondheid indicatoren op het gebied van luchtkwaliteit, geluid, woonomgeving, verkeersongevallen, water en hygiëne, chemische rampen en straling, zijn in 11 Europese landen (waaronder Nederland) getest op beschikbaarheid, kwaliteit, vergelijkbaarheid en beleidsrelevantie. De resultaten laten zien dat in Nederland betrouwbare en complete informatie beschikbaar is voor bijna alle voorgestelde indicatoren.

Op basis van de internationale resultaten van de pilotstudie zijn een aantal indicatoren geselecteerd, waarvoor in een vervolgproject de data verzameld zullen worden. Deze indicatoren zullen onderdeel worden van het Nederlandse informatiesysteem

Trefwoorden: milieu; gezondheid; indicatoren; informatiesysteem

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Summary

This EU-funded pilot study is part of the process of developing an Environment and Health Information System by WHO-Europe. In total 45 Environmental Health indicators have been proposed by a group of experts who adapted an already existing set of indicators in consideration of the issues and demands within the EU-15. The indicators cover seven issues: air quality, noise, housing and settlement, transport accidents, water and sanitation, chemical emergencies, and radiation. The availability, quality, comparability and policy-relevance of these indicators were tested in 11 European countries, including the Netherlands. On the basis of these criteria, indicators that were ready for immediate implementation in most countries were selected. Data on these indicators will be collected in a new project.

Experts in the relevant areas advised about the quality, availability and usefulness of the indicators. A steering committee, consisting of representatives from several ministries, Province and Municipal Health Authorities, advised about the further development and implementation of the EH information system in the Netherlands and discussed the usefulness of the individual indicators for the Netherlands. The results showed that reliable and complete information is available for almost all of the proposed Environmental Health indicators. Most of the information is already published on the Internet (e.g. Environmental and Nature Data Compendium). The steering committee pointed out that data collection should start with the reporting obligations to international organisations, as this will not be a problem for most countries. Furthermore, some indicators (e.g. wastewater treatment, drinking water safety) were not considered very useful for Dutch monitoring purposes, since policy aims are already reached and no additional policies are envisioned.

Positive effects of the study included the identification of data holders for every topic and the integration of currently scattered data in the future. The meta-data of all indicators will be added to an electronic meta-data information system that RIVM has set up and made available. It will be important to keep the system (which is under development) up-to-date and to include new data sources when better information becomes available.

Data on indicators selected for implementation will be collected in a follow-up project. The selected indicators will be part of the Dutch Environment and Health Information System, which is part of the National Environment and Health Action Plan.

1. Introduction

1.1 Background

Currently, on local, national and international level, information on environment and health is available from different institutes, organisations, and authorities, but this information is not integrated and not always comparable. Monitoring systems are focused on either environment or health and are hardly ever linked. This report describes the results of a pilot study which is part of the process of developing a European Environment and Health Information System by the WHO (e.g. the European Community health-monitoring system). The purpose of this system under development is to serve public health and environmental policies, support national and multinational analyses, and facilitate effective decision making related to environmental health risks in the Member States.

In the Netherlands, much information on environment and health is already available. The National Public Health Compass website (available in Dutch: <http://www.nationaal-kompas.nl>) is the gateway to information about health and disease, risk factors, care and prevention in the Netherlands. It is meant for professionals who are active in the field of public health, like policy makers at the Ministry of Health, Welfare and Sport, local authorities, health care providers, patients, and researchers. The National Public Health Atlas gives a geographical illustration of the distribution of public health and care in the Netherlands (available in Dutch on <http://www.zorgatlas.nl>). The Environmental Balance and Nature Balance are yearly reports, which describe the development in the state of environment and nature at national and regional level, and evaluate the efficiency of policy (measures). The underlying data are available in the Environmental and Nature Data Compendium (in English: <http://www.environmentaldata.nl>, in Dutch: <http://www.rivm.nl/milieuenatuurcompendium/nl/>). Once every four years an Environmental Outlook and a Nature Outlook are published to describe trends projected for the next 30 years. These data sources are the basis for any Environmental Health Information system introduced in the Netherlands.

At the moment, the National Institute for Public Health and the Environment (RIVM) is developing a national information and monitoring system 'Environment and Health', as part of the National Environmental Health Action Programme (NEHAP). Purpose is to provide information on the current health risks and effects of environmental pollution in the Netherlands, and to analyse and describe trends in time and space, and effects of EH policy. Elements are for instance a set of indicators, based on the information demands of national and local authorities, a meta-data system, automated registration of EH complaints (at Municipal Health Authorities (GGDs)), and a website to make the gathered EH information available for all target groups, linking to existing information sources in the Netherlands.

Recently, an Advisory Board Monitoring Environment and Health was set up to exchange information on specific health and environment monitoring issues. The board includes representatives of the Ministries of Environment, Health, Transport, as well as local health authorities, environment agencies and NGOs.

1.2 Aim

This report describes the results of a pilot project testing the overall implementability of a set of EH indicators within the framework of an EC-funded ECOEHIS project ('Development of Environment and Health Indicators for the EU countries') co-ordinated by WHO-ECEH. The indicators have been proposed by a group of experts who adapted an already existing set of indicators in consideration of the issues and demands within the EU-15. In total 45 indicators were proposed covering seven important issues: air quality, noise, housing and settlements, transport accidents, water and sanitation, chemical emergencies, and radiation. This set was tested in 11 EU-countries¹ by assessing the availability, quality, comparability, and policy-relevance of the indicators. In chapter 2 of this report the methodology of the pilot study is presented. Chapter 3 describes the results for the Netherlands. The conclusions and recommendations with regard to the overall usefulness and readiness of the indicators in the Netherlands are summarized in chapter 4. In appendices 1 and 2 the definitions of the indicators and a description of their data sources and methods of data collection in the Netherlands are given. The readiness and usefulness of all indicators are summarized respectively in appendices 3 and 4. In appendix 5, definitions of the indicators are described, as defined by WHO for this pilot study.

¹ Austria, Belgium, Denmark, France, Finland, Germany, Italy, the Netherlands, Portugal, Spain, Sweden

2. Methods

A project protocol consisting of guidelines for the organisation of the pilot, and collection and evaluation of the data was provided by WHO to all participating countries. In the Netherlands, Brigit Staatsen/RIVM was appointed National Focal Point (NFP), but her task was somewhat different from the description of the NFP in the project protocol. She functioned as co-ordinator and adviser of the project. At the beginning of the study, several people were contacted to join a national steering committee, including representatives of the Ministry of Spatial Planning, Housing and the Environment (VROM), the Ministry of Health, Welfare, and Sport (VWS), the Ministry of Transport, Public Works and Water Management (V&W), Municipal Health Authorities (GGD), and Provinces. This steering committee advised about the further development and implementation of the system, with regard to national, regional, and local needs. In the future the steering committee will be linked with the Advisory Board Monitoring Environmental Health. One person, Annemiek van Overveld/RIVM, was appointed to collect the meta-data and data for the set of indicators. Instead of setting up a working group of experts, the experts were contacted individually to save time. Due to the short time frame, an expert working group could not be set up. The plan is to set up a permanent expert working group for feedback on the continuation of the project. WHO provided the participating countries with a questionnaire to collect the meta-data and data for all indicators. The NFP decided that within the short time frame, collecting the meta-data was more important than collecting the data; actual data were only collected if available on the Internet. The Netherlands participated in a previous Environmental Health Indicators pilot study in 2001, in which information for a different set of indicators was collected. To prevent duplication, the fact sheets from the 'old' set of indicators were used as starting point to identify the data holders for the 'new' set, and some of the meta-data and data could be copied (with some adjustment) from the previous study.

The indicators were tested for overall implementability on the basis of the *feasibility* of collecting the data elements and the *applicability* of the information carried by the indicator. Feasibility of data-collection depends on availability (e.g. existence, accessibility, timeliness) and quality (e.g., reliability, standardization, completeness). Applicability depends on temporal and spatial comparability and policy-relevance. For the evaluation of the policy-relevance of the indicators, the opinion of the steering committee was requested. Policy-relevance evaluation was based on current policy, including issues from the Dutch NEHAP. In the Netherlands, the NEHAP covers issues such as the indoor environment, monitoring and reducing persistent risks (air pollution, noise), early signalling of new risks, improved risk communication, and strengthening of policies on local level. The problem is that the targets are not clearly stated, since many important issues are already covered by other policies. It was also checked whether indicators were usable for health impact assessment. Some of the indicators were not considered very policy-relevant for the Netherlands, because the Dutch standards are already very high and the specific issues are not regarded a problem anymore. These indicators were then evaluated as poor with respect to policy-relevance.

Several indicators are collected by Statistics Netherlands (CBS), and are available from their website (<http://statline.cbs.nl/>), together with information on study method, population etc. Extensive information on traffic indicators is available (also in English) from the website of the Institute for Road Safety Research (<http://www.swov.nl/>). For every topic an expert of the National Institute for Public Health and the Environment (RIVM) was contacted and interviewed about the related indicators. After that, the questionnaires were filled in by the

interviewer and finally checked by the expert. External experts were contacted if no RIVM expert was available. The experts also reviewed the final draft of this report.

When all questionnaires were answered, the steering committee decided which indicators were useful for the Netherlands in relation to local, regional and national policy issues. An important criterion, apart from availability, quality, and policy-relevance, was whether the Netherlands had a reporting obligation for the specific indicator to the EU. It was thought to be convenient for all countries to have these indicators in the core set of indicators. The steering committee also suggested additional indicators that they missed in the list of indicators. These will be presented in the conclusion and recommendations.

3. Results

This chapter describes the results of the pilot study for the specific themes: air quality, noise, housing and settlements, transport accidents, water and sanitation, chemical emergencies, and radiation. The definitions of the indicators can be found in appendix 5.

3.1 Air quality

In the topic area 'Air', almost all data of the indicators are available and of good quality. No emission and exposure data are available for PM_{2.5} (Air_P1 and Ex1). At the moment, there is only one location in the Netherlands where PM_{2.5} in the air is sampled. The Netherlands Organisation for Applied Scientific Research (TNO) is currently listing and documenting PM₁₀ and PM_{2.5} emissions and their report should include recommendations for PM_{2.5} protocols and estimation methods. Therefore PM_{2.5} data will probably be available in the near future. The indicators Air_D1-D3 (passenger-kilometres, freight transport demand, and road transport fuel consumption) are collected by CBS in specific surveys and reported to Eurostat for international comparisons. These indicators are not directly relevant for evaluating EH policy, but the information on trends in these driving forces provides an important warning signal for policy makers. Data about emissions (Air_P1) from stationary sources are based among others on the emission data in the annual reports of individual companies and also on estimations on the basis of CBS production and energy data. Emissions from mobile sources are calculated by multiplying activity data such as vehicle kilometres and fuel consumption with emission factors. A certain degree of uncertainty exists in the emission figures, because the emissions cannot be measured *exactly*. It is possible that recalculations are performed for previous years if new insights are available, in order to keep the data comparable. The indicator (Air_P1) is relevant for the evaluation of specific measures. The indicator Air_Ex1 is the population-weighted annual average concentration of air pollutants and is based on continuous sampling at numerous locations throughout the country (number depending on pollutant). The number of monitoring stations has been changed in 2002, but this did not affect the comparability over time much. This indicator is used to evaluate measures and assess the air pollution with respect to limits and goals, for example smog levels. The concentration data are used to calculate the amount of life lost due to exposure to particulate matter (Air_E1). This indicator is relevant when comparing the cost-effectiveness of different policy options. The Dutch Tobacco Act (Air_A1) changed in 2002 and included more drastic measures than the 'old' law, for example a smoking ban in cinemas and hospitals. There is no smoking ban yet in restaurants and bars. The Food and Consumer Product Safety Authority (VWA) checks the compliance to the law.

Table 1: Evaluation of indicators on air quality

Indicator ID	Definition	Data Availability*	Data Quality*	Comparability*	Policy-relevance*	Overall Readiness [^]
Air_D1	Passenger-kilometres	2 [#]	2	2	2	1 [#]
Air_D2	Freight-transport	2	2	2	2	1
Air_D3	Fuel consumption	2	2	2	2	1
Air_P1	Air pollution emissions	2 [#]	2	2	2	1 [#]
Air_Ex1	Concentration of air pollutants	2 [#]	2	2	2	1 [#]
Air_E1	Years expected life lost	2 [#]	2	2	1	1 [#]
Air_A1	ETS policy	2	2	2	2	1

* 2 = 'good', 1 = 'fair', or 0 = 'poor'

[^] 1. Immediately, 2. By the end of 2004, 3. By the end of 2005, 4. After 2006

[#] No data available for PM2.5

3.2 Noise

The exposure of the population to certain levels of noise (Noise_Ex1) is based on model calculations, combined with monitoring data on traffic. The traffic intensity of road, rail and air transport is partly measured, partly estimated. Data on exposure to industry noise are only partly available and collection would take a lot of effort, because data are scattered among different authorities. The model calculations result in regional/national noise maps and can be linked to population figures for an estimation of the exposed population. Some uncertainties exist, for instance not many data are available on traffic intensity on municipal roads and this has to be estimated. Noise monitoring reports have been published by RIVM, focussing on validation of the noise calculations with a limited number of measurements. Some of the earlier data are already available in Lden (Day-evening-night level). If not, the data can be recalculated, but this will cost extra time and money. Currently, it is difficult to make international comparisons, but this will improve when international EC guidelines are followed. The data for calculation of the attributable fraction of risk of cardiovascular morbidity due to noise exposure (Noise_E1) are more difficult to collect, because in the Netherlands data on incidence and prevalence of cardiovascular diseases are coming from different registries. In addition, it is uncertain whether hospitals in the Netherlands will continue ICD coding in the future to register admissions, because a new code will be introduced in 2005. The national incidence and prevalence of ischemic heart disease is calculated/estimated by RIVM, but this is not done for total cardiovascular disease or high blood pressure. These estimations can be made though. Noise-related disease burden calculations (expressed in Disability-Adjusted Life Years (DALYs)) have been carried out by RIVM. The indicator is useful in case of comparative risk assessment (comparing health impacts of competing decision alternatives) and cost-benefit analyses, but less relevant for evaluation of current policy since quantitative targets are missing and the uncertainty behind the risk estimates used is still rather large. In the Netherlands, two sources are available concerning noise annoyance (Noise_E2). Unfortunately, the data of these sources cannot easily be compared because of a difference in the question(s) asked. The TNO data are more according to the definitions of the WHO methodology sheet, but are collected only once

every five years. The CBS data differ from the WHO definition, but are provided yearly. The relevance of this indicator depends on policy aims and is for example highly relevant for evaluation of measures, e.g. around Schiphol Airport. Maximum sound levels for indoor and outdoor events (Noise_A1) are included in the Environmental Protection Act. The regulations are enforced by the local authorities and acoustic reports are often demanded from discotheques, restaurants etc. If sound levels are too high, measures have to be taken to lower them. No regulations exist for walkmans/computer games yet. Most municipalities have noise action plans (NAP) and in the future a NAP will be required for six agglomerations (Noise_A2). The EU Noise Directive (Noise_A3) has not been implemented yet in Dutch laws, but will be in the near future (~2005). Noise maps already exist at RIVM, but VROM decided that every party has to deliver their own noise maps (e.g. municipalities, provinces) and not RIVM. These parties are obliged to have their noise maps ready by 2007, but whether this is possible within this timeframe remains unclear. Thus, Noise_A3 is not regarded very useful for the Netherlands.

Table 2: Evaluation of indicators on noise

Indicator ID	Definition	Data Availability*	Data Quality*	Comparability*	Policy-relevance*	Overall Readiness^
Noise_Ex1	Noise exposure	2 #	1	2	2	1 #
Noise_E1	Risk of cardiovascular disease to noise	2 #	2	1	1	2 #
Noise_E2	Annoyance/sleep disturbance	2	2	2	2	1
Noise_A1	Maximum sound levels	2	1	0	0 ^a	1
Noise_A2	Noise actions plans	1	1	2	1	1
Noise_A3	EU Noise Directive	0	N/A	N/A	1	4

* 2 = 'good', 1 = 'fair', or 0 = 'poor'

^ 1. Immediately, 2. By the end of 2004, 3. By the end of 2005, 4. After 2006

Not all exposure data available for industry noise

^a on national level, more relevant on municipal level

3.3 Housing and settlements

Several housing indicators are available from a 5-yearly survey carried out by VROM, although some differences in definitions exist compared to the WHO fact sheets. In the Housing Quality Survey (KWR) from VROM, reliable data are collected via inspections of 15,000 dwellings (in 2000), and by telephone surveys of residents of inspected homes. Basic questionnaires are being used, with additional questions about policy-relevant issues. The data are comparable over time, but because of the methods used international comparison may be difficult. An official request should be submitted to VROM to acquire the data, so they will probably be available at the end of 2004. The inspections focus on several aspects, such as the dwelling floor area and number of rooms (Hous_Ex1), the presence of dampness or mould in the home (Hous_Ex4), the cost of construction (Hous_P1), and the presence of high thresholds/steps and narrow doorways (Hous_Ex2). Overall accessibility is not defined as described by the WHO, but as internal accessibility (all important rooms on the same

floor) and external accessibility (no need to climb stairs to enter the dwelling). Household hygiene (Hous_Ex5) is checked in the KWR resident questionnaire, which asks for the number of toilets, baths etc. in the home. Crowding and household hygiene are not considered a very high priority in Dutch politics. These indicators are only relevant for monitoring in problem areas in large cities. VROM also conducts another survey, every four years: the Housing Needs Survey (WBO, ~90,000 respondents). In this survey, residents are asked their opinion on (aspects of) their dwelling and neighbourhood, including data on crowding, household hygiene, type of residence, perception of crime, etc.

Much of the indicator information, such as household hygiene and dwelling characteristics, is also collected by CBS that yearly conducts the POLS survey (Permanent Survey on the Living Conditions) with the purpose to collect information on living conditions of the Dutch population. This survey is divided in a basic questionnaire (30,000 to 100,000 respondents per year) and additional modules for extra information about certain issues (approximately 5000 respondents per year). Extremes of outdoor temperature are measured by the KNMI (Hous_Ex3), not normally in periods of 2 days, but that could be calculated and linked to hospital admissions that are registered nationally in the National Medical Register. From 2005, hospitals will perhaps not use the ICD coding system anymore, therefore the future of the medical register is still uncertain. Radon is measured in dwellings (Hous_Ex6) on an ad hoc basis (last study in 1994); concentrations of later years have been estimated. The next study will be in 2005, and will certainly be continued in the future to monitor trends in indoor radon concentration. No national action level has been implemented. At the moment, policy-makers are preparing new legislation on radon emission limits for building materials. Information about crime and perception of crime (Hous_Ex7) is collected in the POLS survey by CBS (~5,000 respondents) and a 2-yearly survey called the Police Monitor (~90.000 respondents), in which respondents are asked about safety in and around the house. This indicator is very useful for evaluation of prevention measures and functioning of the police. Housing accidents (Hous_E1) are monitored by the Injury Surveillance System, in which information on patients that are treated at the ER of a hospital are registered. The data are not complete (not all hospitals are included) and are therefore corrected on the basis of other national registers. The collection of information on housing accidents is used to support policies of VWS to improve safety in private settings, for example by prevention campaigns.

Table 3: Evaluation of indicators on housing and settlements

Indicator ID	Definition	Data Availability*	Data Quality*	Comparability*	Policy-relevance*	Overall Readiness [^]
Hous_P1	Affordability	1-2	2	2	2	2
Hous_Ex1	Crowding	2	2	2	1	2
Hous_Ex2	Accessibility	1-2	2	2	2	2
Hous_Ex3	Extreme temperature	1	2	2	1	2
Hous_Ex4	Dampness/Mould Growth	2	2	2	2	2
Hous_Ex5	Household hygiene	2	2	2	0	2
Hous_Ex6	Indoor radon in dwellings	0-1	2	2	2	3
Hous_Ex7	Crime/Perception of crime	2	2	2	2	1
Hous_E1	Housing safety and accidents	2	2	2	2	1-2

* 2 = 'good', 1 = 'fair', or 0 = 'poor'

[^] 1. Immediately, 2. By the end of 2004, 3. By the end of 2005, 4. After 2006

3.4 Traffic accidents

Almost all traffic indicators are available and of good quality, very policy-relevant and ready for immediate implementation. Traffic indicators are not a part of environmental health policy in the Netherlands, as it is covered by transport policies. For a long time now, the road safety policy has used quantitative targets. The targets in the National Traffic and Transport Plan are: in 2010 30% less road deaths and 25% less in-patients than in 1998. The Institute for Road Safety Research (SWOV) reports traffic indicators on the Internet in a 'Knowledge Base', available in English (<http://www.swov.nl/>). Road accident rate (Traf_S2), injury rate (Traf_E3), mortality rate (Traf_E1), and deaths due to drinking driving (Traf_E5) are registered by the police, who sends the information to the Transport Research Centre (AVV). The registration by the police is by no means always complete; the greater the injury severity, the more complete the registration. The 'real' number of victims is estimated through a cross-check with hospital records from the National Medical Register, the Injury Surveillance System, and death statistics, and is reported on the SWOV page as well. Data about number of (circulating) vehicles and new car sales (Traf_S1) are available from CBS and based on national vehicle registration. Exceeding of speed limits (Traf_S3) on national roads is measured by a national system from AVV that measures both the speed of passing vehicles and the traffic volume (at circa 100 locations) per vehicle type; data about speeding on 80-100 km and municipal roads only exist from surveys in 1994-96. CBS carries out the yearly National Travel Survey with the purpose of describing the travelling behaviour of the Dutch population (Traf_Ex1). For each trip, several elements are registered in a diary such as place of origin and destination, time of departure and arrival, and mode of transport. Many mistakes can be made when filling in a diary, but the data are corrected for this. The design changed in 1999 and data of previous years will not be comparable. Observations of whether car occupants are wearing seatbelts and/or using child seats (Traf_Ex2) are made in a random sample of moving traffic on 84 locations throughout the country. Data about helmet use by

motorcycle occupants are only available for 1985 and not for recent years. The potential years of life lost due to traffic accidents (Traf_E2) are calculated by multiplying the number of traffic-related deaths per year with the remaining life expectancy at the specific age. Figures are reported 4-yearly in the Dutch Public Health Status and Forecasts Report, the latest available data are for 2000. DALYs lost due to traffic accidents (Traf_4) are also calculated for this report, although much discussion exists about the quality of these estimations. The expert on DALYs stated that the injury statistics that are used to calculate the DALYs are not very precise and do not say much about the cause of the injury. Neither do they include injuries that are not permanent (i.e. present for more than one year). A rough estimation is made of which part of the injuries is caused by traffic accidents. As a consequence, the DALYs lost for traffic accidents as calculated in the Netherlands are most likely an underestimation of the real number. Nevertheless, DALYs can be important besides the years of life lost due to traffic incidents (Traf_E2), because they include disability as well as mortality. The indicator is useful in case of comparative risk assessment (comparing health impacts of competing decision alternatives) and cost-benefit analyses but less relevant for evaluation current policy since quantitative targets are missing.

Table 4: Evaluation of indicators on traffic accidents

Indicator ID	Definition	Data Availability*	Data Quality*	Comparability*	Policy-relevance*	Overall Readiness [^]
Traf_D1 (Air_D1)	Passenger-kilometres	2	2	2	2	1
Traf_S1	Age vehicle fleet	2	2	2	2	1
Traf_S2	Road accident rate	2	2	2	2	1
Traf_S3	Speeding	1	2	2	2	1 (national roads) - 4 (other roads)
Traf_Ex1	Person time on road	2	2	1	2	1
Traf_Ex2	Safety device use	1	1	1	2	1 – 4 (helmet)
Traf_E1	Mortality rate	2	2	2	2	1
Traf_E2	Years of life lost	2	2	2	2	1
Traf_E3	Injury rate	2	1	2	2	1
Traf_E4	DALYs lost	2	1	2	1-2	1
Traf_E5	Drinking driving	2	1	2	2	1

* 2 = 'good', 1 = 'fair', or 0 = 'poor'

[^] 1. Immediately, 2. By the end of 2004, 3. By the end of 2005, 4. After 2006

3.5 Water and sanitation

Complete and reliable information is available for drinking water and recreational water. The District Water Boards perform measurements of recreational water (WatSan_S1) once every two weeks during the bathing season (May-October) by a standard protocol, although differences may occur through differences in laboratories. If a site is considered polluted the province will take measures and if necessary put out a swimming ban. At the end of the season the Institute for Inland Water Management and Waste Water Treatment (RIZA) compares the results with the European standards for bathing water and reports to the

European Commission. Measurement of drinking water (WatSan_S2) is performed by the water supply companies and reported to RIVM. In 2001, the law involving drinking water changed and this resulted in minor changes in method and system, but the overall data are still comparable. The expert on drinking water quality stated that a better indicator for drinking water compliance (Watsan_S2) would be the compliance per substance analysed (for a selected number of substances) instead of the overall compliance, because overall data do not show which substance exceeds the standard. She also stated that the indicator Watsan_S2V2 should better be defined as the total number of measurements/observations, and not the total number of samples. The indicators 'waste water treatment' (WatSan_P1) and 'safe drinking waters' (WatSan_Ex1) are being collected by respectively Eurostat/OECD and WHO. These indicators are not very useful for Dutch monitoring purposes, since they have already been implemented for almost 100%. Data on outbreaks of waterborne diseases (WatSan_E1) are available from questionnaires which are sent out every year to all Municipal Health Authorities (GGDs) and Provinces to make an inventory of the number of outbreaks of diseases probably related to recreation in surface waters. The results are not very reliable, because most of the time the water is not checked on micro-organisms. Furthermore, not all incidents are reported to the authorities (for instance, mild cases are often not registered) and not all water-related cases will be connected to water (food is often thought to be the cause). Therefore the real number of incidents will be higher. This year a new study is started at RIVM, in which water samples will be taken if a case is suspected to be related to water quality. Maybe this study will continue in the future, but this indicator does not have a high priority in Dutch politics so that remains unclear. The new guidelines on bathing water management (WatSan_A1) and water safety plans (WatSan_A2) are currently being implemented in Dutch regulation. The guidelines on water safety plans are regarded not very useful for the Netherlands, because the water quality is already very high and most parts of the guidelines are already in force in the Netherlands (but named differently).

Table 5: Evaluation of indicators on water and sanitation

Indicator ID	Definition	Data Availability*	Data Quality*	Comparability*	Policy-relevance*	Overall Readiness [^]
WatSan_P1	Wastewater treatment	1	2	2	0	1
WatSan_S1	Recreational water compliance	2	2	2	2	2
WatSan_S2	Drinking water compliance	2	2	2	2	1
WatSan_Ex1	Safe drinking water	2	2	2	0	1
WatSan_E1	Waterborne diseases	2 [#]	0	2	0	1 [#]
WatSan_A1	Bathing water management	0	N/A	N/A	1	?
WatSan_A2	Water safety plan	0	N/A	N/A	0	?

* 2 = 'good', 1 = 'fair', or 0 = 'poor'

[^] 1. Immediately, 2. By the end of 2004, 3. By the end of 2005, 4. After 2006

[#] Only for recreational water

3.6 Chemical emergencies

In the Netherlands, the SEVESO directive has been implemented in the Prevention of Major Accidents Decree (BRZO). Every year a list is composed with all establishments that contain large amounts of chemicals according to the SEVESO II directive (Chem_P1). Also listed is the mean amount of substances present and the maximum amount that is permitted. The expert (Ad Matthijsen/RIVM) stated that it is the best list possible, although some establishments will be missed. In the past years, some large incidents happened in the Netherlands (for instance the firework disaster in Enschede in 2000), which flared up the discussion about legislation. An 'action plan' will be started this year to strengthen the implementation and enforcement of external safety measures by authorities. Furthermore, new laws will be implemented to minimize the risks to the population. According to the BRZO, upper tier establishments have to demonstrate that they have taken sufficient measures to minimize risks by making a 'Safety Report', which includes a QRA (Quantitative Risk Analysis) in which the risks are calculated with respect to houses/schools etc. in the neighbourhood. Local authorities and provinces are responsible for the implementation and enforcement of external safety policies. Notifications to EU of chemical incidents in fixed facilities are required according to SEVESO II and carried out. The Labour Inspectorate reports incidents to the Ministry of Social Affairs and Employment, which reports to the EU. All incidents are included in the Major Accident Reporting System (MARS) database. Also available is a Dutch risk register, which includes the risk evaluation of establishments, transport routes and pipelines. VROM is the co-ordinating ministry with respect to external safety issues. The National Advisory Body 'BOTmi' is a policy supporting team regarding environmental incidents. They are on call 24 hr a day, and in case of an emergency they give advice on the risks. The establishments need to have an environmental-health plan in case of an incident, but there are also EH plans available at Municipal, Provincial and Governmental level. ER Guidelines are included in the 'intervention levels dangerous substances'. In this booklet consequences and measures are described that could be taken if a certain level of a substance is exceeded. A public alerting system is available and promoted on TV and radio. When a siren is heard, all citizens are advised to go inside, close doors and windows and turn on radio or TV.

It is thought that the proposed chemical indicators are not very useful for environmental health monitoring purposes, since most of them only say something about national policy and not so much on actual risks and compliance. Data on number of fatalities or injuries from the MARS database would be more interesting from an environmental health point of view. The set of indicators tested in this project should therefore be considered as a basic set, and be completed in the future.

Table 6: Evaluation of indicators on chemical emergencies

Indicator ID	Definition	Data Availability*	Data Quality*	Comparability*	Policy-relevance*	Overall Readiness [^]
Chem_P1	Facilities under Seveso II	2	2	2	2	1
Chem_A1	Land-use planning	2	2	2	2	1
Chem_A2	Incidents register	2	2	2	2	1
Chem_A3	Government preparedness	2	2	2	2	1

* 2 = 'good', 1 = 'fair', or 0 = 'poor'

[^] 1. Immediately, 2. By the end of 2004, 3. By the end of 2005, 4. After 2006

3.7 Radiation

The Netherlands Cancer Registry collects high quality data on almost all types of cancer in the Netherlands. Basal cell carcinomas are usually treated outside the hospital, and are therefore excluded from the national registry, but on the basis of complete regional data from South-East Netherlands combined with national data about other skin cancers, estimations are made of national basal cell carcinoma incidence. The Euroatom Treaty concerning the monitoring of levels of radioactivity in the environment is incorporated in Dutch legislation. RIVM, RIZA, the National Institute for Coastal and Marine Management (RIKZ) and the Food and Consumer Product Safety Authority (VWA) carry out radioactivity measurements in airborne particles, deposition, surface water, seawaters, drinking water and food. Results for ambient dose equivalent rates are obtained from the Dutch National Radioactivity Monitoring Network. All results are reported annually to the government and the EU. This is only done for monitoring purposes; in case of an incident action will be taken. The Dutch monitoring program is not fully in compliance with the recommendations of the EU, mainly with respect to measurements of drinking water, milk and foodstuffs. A standard food package, recommended by the EU, is not considered useful for the Netherlands because a lot of imported food is eaten. Some food is checked on an ad hoc basis (for example mushrooms from Russia). The Netherlands do not have a dense or sparse network, because it is such a small country and therefore seen as one region for most measurements.

Table 7: Evaluation of indicators on radiation

Indicator ID	Definition	Data Availability*	Data Quality*	Comparability*	Policy-relevance*	Overall Readiness [^]
Rad_E1	Skin cancer	2	2	2	1	1
Rad_A1	Radiation monitoring	2	2	2	0	1

* 2 = 'good', 1 = 'fair', or 0 = 'poor'

[^] 1. Immediately, 2. By the end of 2004, 3. By the end of 2005, 4. After 2006

4. Conclusions and Recommendations

4.1 Overall readiness and costs

In the Netherlands, reliable and complete information is available for almost all indicators, and most of them are already reported to international organisations such as Eurostat, WHO, EEA and EC. The overall readiness of the indicators is summarised per topic in appendix 3. Some of the indicators are not ready for immediate implementation, because the data have to be requested from the data holders, or because recalculations of current data are necessary to comply with the definitions used in the WHO fact sheets. This will probably not take much time (end 2004). The 'least ready' indicators are the indicators that refer to a Directive (e.g. noise and water) that has not yet been implemented in the Netherlands. The exact date of implementation is difficult to predict, but it is certain (mandatory) that they will be implemented in the future. Most effort has been put into identifying the data holders for the housing indicators. For many of these indicators it was not known who the data holder was. The distinction had to be made between data that were not available and data that were just hard to find. The housing indicators are also more complex compared to indicators on other topics. One single housing indicator consists of many data-elements, and therefore the overall readiness is difficult to estimate. Some of the indicators are rather experimental and not generally used as housing indicator in the Netherlands. As a result small differences in definition exist between the WHO methodology sheets and the questions asked in the national surveys. This could be a problem when international comparisons are made. It is therefore important to clearly define the housing indicators and determine if the definitions are sufficiently comparable. This is of course equally important for other indicators.

The data downloaded from the websites of CBS and SWOV are available for free (if the source is mentioned), as well as some data from RIVM, such as air pollutant emissions and noise exposure. Several other data-elements available from RIVM will cost money if the calculation of the data involves extra work. Data from data holders other than RIVM have to be officially requested; the precise costs for these data could not be estimated at this moment.

4.2 Problems

During the project some problems were encountered. The experts had trouble answering the questions about policy-relevance for all data-elements and stated that these answers were rather subjective. The answer will differ depending on the use of the indicators, e.g. to examine health benefits of policy measures or compliance. The questions about policy-relevance should have been asked only for the 'overall' indicators and not for every data-element separately. Sometimes, the precise definition of a variable was unclear from the fact sheets provided by WHO-ECEH. Furthermore, the questionnaire did not apply to all data-elements. If the data-element for example concerned current policy (e.g. noise policy) it was difficult to assess the quality/comparability or collect data from earlier years. Determining the overall implementation was also difficult, especially when an indicator existed of many data-elements, of which some were available and others not.

4.3 Usefulness

The steering committee was asked to determine the usefulness of the set of indicators for the Netherlands. They concluded that the indicators that are already reported to the EU (i.e. emission of air pollution) should certainly be included in the core set of indicators. The collection of these data is compulsory for all countries. Furthermore, some of the indicators were not considered very useful for the Netherlands, because the national policy aims for those issues were already reached (i.e. waste water treatment, ~100% coverage). However, indicators that are not useful for the Netherlands may still be useful for other countries. Therefore it was proposed to distinguish a core set and an extended set of indicators: the core set being compulsory for all member states to collect, the extended set should be seen as a guideline for additional monitoring if important for the specific country.

Proposed for inclusion in an extended set and important for the Netherlands are: *Air_E1* (expected Life lost to PM_{2.5}), *Noise_E1* (attributable fraction of morbidity to noise), *Hous_Ex1* (crowding), *Hous_Ex2* (accessibility), *WatSan_E1* (outbreaks of waterborne diseases), *WatSan_A1* (bathing water management), *WatSan_A2* (water safety plan).

Proposed for the extended set, but not important for the Netherlands (possibly important for other countries) are: *Hous_Ex5* (household hygiene), *WatSan_P1* (waste water treatment), *WatSan_Ex1* (Safe drinking water).

Not useful at all are: *Noise_A1* (maximum sound levels), *Noise_A3* (noise Directive).

The other indicators should be included in the core set of indicators (see annex 4).

4.4 Additional indicators and remarks of the steering committee

The steering committee also made suggestions for additional indicators that could be useful for the Netherlands, now or in the future. Data on all suggested indicators are being collected in the Netherlands.

Air:

- Emission/concentration of greenhouse gases,
- More effect indicators (e.g. asthma attributed to air pollution),
- Population exposed to levels of a pollutant above the maximum permitted value,
- Odour annoyance.

Risk perception

- Concern about environmental pollution/safety issues,
- Environment-related health complaints reported to e.g. local health authorities.

Housing:

- Well-being (satisfaction with the living environment),
- CO exposure in homes (this may be important in the future because of lack of maintenance of heating devices),
- Energy consumption of households,
- Indoor air pollution (chemicals)

Water and Sanitation:

- Number of risky overflows (i.e. sewage water spills in recreational water, usually during heavy rain, because the sewer cannot process the large amount of (rain) water),
- Number and causes of stops in collection of surface and groundwater by water companies (because the surface water quality is not acceptable for drinking water production).

Chemical Emergencies:

- Number of fatalities and injuries caused by chemical incidents. Data can be found in the MARS database.

Radiation:

- Exposure to electromagnetic fields,
- UV exposure,
- More effect indicators (e.g. leukaemia and brain tumours) in relation to developments in non-ionising radiation.

Furthermore, it was debated that some of the housing indicators would better be moved to other sections, for the purpose of recognition. For example, the indicator about climate could be included in the air section; the indicator on indoor radon could be included in the section on radiation.

4.5 Reactions and recommendations

Most data holders and experts were enthusiastic about the ECOEHIS project. Authorities were also pleased because the data holders for every topic had been identified and the currently scattered data in the future will become available as an integrated system. The meta-data of all indicators will be added to the IMEG database RIVM has set up. This is an electronic meta-data information system, which can be provided on request and will be accessible for everyone in the future. Some of the experts stated that they had already been contacted several times in the past (for example for the previous indicators pilot project), or that the data were already included in a European database. It is important to identify and link with other national or international initiatives, which overlap with the WHO project.

In the Netherlands, more than one source of information exists for some indicators. For example in the case of annoyance to noise: TNO conducts a survey every 5 years with data according to the definitions of the WHO, yearly data are available from CBS, but the definitions are not really the same as described in the WHO fact sheets. Criteria should be formulated to select the best data source in a country.

GGDs in collaboration with RIVM are developing a uniform health questionnaire for all regions (at the moment the Health Authorities all have their own questionnaire) which will also include valuable information for indicators in this project. It will be important to keep up with new initiatives and update the information system when better information becomes available.

The indicators that are ready for implementation in all countries are selected for a follow-up project in which data on these indicators will be collected for all countries. The selected indicators will be part of the Dutch environment and health information system that is being developed in the framework of the NEHAP.

Abbreviations

Acronyms	Full name
AVV	Transport Research Centre (Adviesdienst Verkeer en Vervoer)
BRZO	Prevention of Major Accidents Decree (Besluit Risico's Zware Ongevallen)
CBS	Statistics Netherlands (Centraal Bureau voor de Statistiek)
DALY	Disability-Adjusted Life Year
GGD	Municipal Health Authorities (Gemeentelijke Gezondheidsdienst)
Inspectorate W&V	Inspectorate for Health Protection and Veterinary Public Health (Inspectie Gezondheidsbescherming, Waren en Veterinaire Zaken)
KNMI	Royal Dutch Meteorological Institute (Koninklijk Nederlands Meteorologisch Instituut)
Lden	Level day-evening-night
NEHAP	National Environment and Health Action Plan (Nationaal Actieprogramma Milieu en Gezondheid)
NFP	National Focal Point
RIKZ	National Institute for Coastal and Marine Management (Rijksinstituut voor Kust en Zee)
RIVM	National Institute for Public Health and the Environment (Rijksinstituut voor Volksgezondheid en Milieu)
RIVM-CEV	Centre for External Safety (Centrum voor Externe Veiligheid en Vuurwerk)
RIVM-IMD	Centre for Inspectorate Research, Emergency Response and Drinking Water (Centrum Inspectieonderzoek, Milieucalamiteiten en Drinkwater)
RIVM-LED	European Air Quality and Sustainability (Team Luchtkwaliteit en Europese Duurzaamheid)
RIVM-LOK	Quality of the Local Environment (Leefomgevingskwaliteit)
RIVM-LSO	Laboratory for Radiation Research (Laboratorium voor Stralingsonderzoek)
RIVM-LVM	Laboratory for Environmental Monitoring (Laboratorium voor Milieumetingen)
RIVM-MGB	Microbiological Laboratory for Health Protection (Microbiologisch Laboratorium voor Gezondheidsbescherming)
RIVM-PZO	Centre for Prevention and Health Services Research (Centrum voor Preventie en Zorgonderzoek)
RIVM-VTV	Centre for Public Health Forecasting (Centrum voor Volksgezondheid Toekomst Verkenningen)
RIZA	Institute for Inland Water Management and Waste Water Treatment (Rijksinstituut voor Integraal Zoetwaterbeheer en Afvalwaterbehandeling)
SWOV	Institute for Road Safety Research (Stichting Wetenschappelijk Onderzoek Verkeerveiligheid)
SZW	Ministry of Social Affairs and Employment (Ministerie van Sociale Zaken en Werkgelegenheid)
TNO	Netherlands Organisation for Applied Scientific Research (Nederlandse Organisatie voor toegepast-natuurwetenschappelijk onderzoek)
VROM	Ministry of Spatial Planning, Housing and the Environment (Ministerie van Volkshuisvesting, Ruimtelijke Ordening en Milieu)
VROM-DGM	Directorate General for Environmental Protection (Directoraat-generaal Milieu)
VROM-DGW	Directorate General for Housing (Directoraat-Generaal Wonen)
V&W	Ministry of Transport, Public Works and Water Management (Ministerie van Verkeer en Waterstaat)
VWA	The Food and Consumer Product Safety Authority (Voedsel en Waren Autoriteit)
VWS	Ministry of Health, Welfare and Sports (Ministerie van Volksgezondheid, Welzijn en Sport)

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Appendix 1: Data holders and sources of the indicators

In the following tables the Dutch data holders and sources of data are showed for each topic separately. A more detailed description of the data sources and methods of data collection can be found in appendix 2.

Air

Indicator	Title	Data holder	Source
Air_D1	Passengers-kilometres by mode of transport	CBS	National Travel Survey
Air_D2	Freight-transport demand (Tonne-kilometres)	CBS	Transport Survey
Air_D3	Road transport fuel consumption	CBS	-
Air_P1	Air pollution emissions (SO ₂ , PM ₁₀ , PM _{2.5} , NO _x , CO, NMVOC)	RIVM-MNP	Emission Registration
Air_Ex1	Population-weighted annual average concentration of air pollutants (NO ₂ , PM ₁₀ , PM _{2.5} , SO ₂ , O ₃)	RIVM-LVM	National Air Quality Monitoring Network
Air_E1	Years of expected life lost attributable to air pollution	*	
Air_A1	Policies on environmental tobacco smoke (ETS) exposure	Stivoro	

* Calculation

Noise

Indicator	Title	Data holder	Source
Noise_Ex1	Population exposed to various noise levels (Lden and Lnight) by different sources	RIVM-LOK	Model calculations (EMPARA)
Noise_E1	Attributable fraction of risk of cardiovascular morbidity/mortality to noise exposure	Morbidity : RIVM-VTV	Several regional registrations and national studies
Noise_E2	Self reported noise health effects – Annoyance and sleep disturbance	TNO and RIVM	Inventory of annoyance and sleep disturbance by local pollutants
Noise_A1	National regulations on maximum sound levels for indoor and outdoor leisure events	Local, regional and national authorities	-
Noise_A2	Existence and effectiveness of urban or national action plans to solve noise problems	Co-ordinating Committee Authority Monitor	Policy Monitor (Overheidsmonitor) <2002
Noise_A3	Willingness to enforce and implement the environmental noise EU Directive and to apply noise abatement measures	*	

* Not implemented yet

Housing

Indicator	Title	Data holder	Source
Hous_P1	Affordability to buy dwelling	Cost : VROM-DGW Income: CBS	Housing Quality Survey (KWR) Income panel study
Hous_Ex1	Crowding	CBS VROM-DGW	POLS housing survey Housing Quality Survey (KWR) Housing Needs Survey (WBO)
Hous_Ex2	Accessibility	Barriers: VROM-DGW Limitations : Statistics NL Legislation : Ministry of Health, Welfare and Sports	Housing Quality Survey (KWR) Housing Needs Survey (WBO) POLS health survey Law on Facilities for the Handicapped
Hous_Ex3	Extremes of Indoor Air Temperature	Temperature : KNMI Hospital Records : Prismant	- National Medical Register
Hous_Ex4	Dampness/Mould Growth	VROM-DGW	Housing Quality Survey (KWR)
Hous_Ex5	Household hygiene	CBS VROM-DGW	POLS survey Housing Quality Survey (KWR) Housing Needs Survey (WBO)
Hous_Ex6	Indoor radon in dwellings	RIVM-LSO	Dutch National Survey on Radon in Dwellings
Hous_Ex7	Crime/Perception of crime	CBS Intomart VROM-DGW	POLS victim survey Police Monitor Housing Quality Survey (KWR) Housing Needs Survey (WBO)
Hous_E1	Housing safety and accidents	Consumer Safety Institute CBS	Injury Surveillance System Causes of death statistics

Traffic accidents

Indicator	Title	Data holder	Source
Traf_D1 (Air_D1)	Passengers-kilometres by mode of transport	CBS	National Travel Survey
Traf_S1	Age of vehicle fleet	CBS	Vehicle registration
Traf_S2	Road accident rate	SWOV	Registration by police
Traf_S3	Speed limit exceedances	SWOV	Speed measurement system
Traf_Ex1	Person time spent on the road	CBS	National Travel Survey
Traf_Ex2	Use of safety vehicle device	SWOV	Survey Use of protection devices
Traf_E1	Mortality due to transport accidents	SWOV	Registration by police
Traf_E2	Potential Years of Life Lost	RIVM-VTV	*
Traf_E3	Injury rate	SWOV	Registration by police
Traf_E4	DALYs lost due to road accidents	RIVM-VTV	*
Traf_E5	Mortality due to drinking driving	SWOV	Registration by police

* Calculation

Water and Sanitation

Indicator	Title	Data holder	Source
WatSan_P1	Wastewater treatment	Eurostat/OECD	Questionnaire
WatSan_S1	Recreational water compliance	RIZA	Continuous monitoring
WatSan_S2	Drinking water compliance	RIVM-IMD	Measurement programme performed by the waterworks
WatSan_Ex1	Safe drinking waters	WHO	
WatSan_E1	Outbreak of water-borne diseases	RIVM-MGB	Yearly questionnaire
WatSan_A1	Management of bathing waters	*	
WatSan_A2	Water safety plans	*	

* Not implemented yet

Chemical Incidents

Indicator	Title	Data holder	Source
Chem_P1	Industrial facilities under EU 'Seveso II' directive	RIVM-CEV	Inventory of SEVESO-establishments
Chem_A1	Regulatory requirements for land-use planning	VROM	
Chem_A2	Chemical incidents register	Ministry of Social Affairs and Employment (SZW)	
Chem_A3	Government preparedness	VROM	




Radiation

Indicator	Title	Data holder	Source
Rad_E1	Incidence of skin cancer	Dutch Association of Comprehensive Cancer Centres	Netherlands Cancer Registry
Rad_A1	Effective environmental monitoring of radiation	RIVM-LSO	National Radioactivity Monitoring Network





Appendix 2: Information on the data sources





In the following tables the sources of data in the Netherlands are described per indicator. The URLs that are mentioned mostly refer to Dutch websites. Some refer to tables containing the data, others refer to pages with explanation of the study design or other background information. The websites have been accessed in July and August 2004. The URLs may have changed over time.

Population data


Total resident population of the year	The observations are based on the information CBS receives from the Municipal Basic Administration of Population Data  http://statline.cbs.nl/StatWeb/table.asp?STB=G1.G2.G3&LA=nl&DM=SLNL&PA=7461bev&D1=0&D2=0-100&D3=a&D4=a,!0-46&HDR=T
Age specific mortality rates (all causes of death)	Causes of death statistics: A physician determines the cause of death and reports via the Registry of Births, Deaths and Marriages (Burgerlijke Stand) to CBS. The primary cause of death is registered, but in the case of multiple diseases this can be complicated. Secondary causes of death are also registered. Cases are included if the deceased person was registered at a Dutch address at the time of death. Causes of death are coded according to ICD-10. Also registered are sex, age and address of the deceased.  http://statline.cbs.nl/StatWeb/table.asp?HDR=T&LA=nl&DM=SLNL&PA=37530ned&D1=0.2.4&D2=0-100&D4=a,!0-46&STB=G1.G2.G3
Gross Domestic Product	The Gross National Product is calculated according to the European System of Accounts 1995 (ESER 1995) of Eurostat.  http://statline.cbs.nl/StatWeb/table.asp?STB=G1.G2&LA=nl&DM=SLNL&PA=37054reg&D1=0-1&D2=0&D3=a,!0-1&HDR=T





Air data


Passenger-km by mode of transport (Air_D1 and Traf_D1)	Since 1978 CBS carries out a yearly National Travel. This survey was renewed in 1999. It is set up as a relatively easy written survey with additional telephonic motivation of respondents (that are reachable by phone) and if necessary a more detailed survey can be done to collect more information per subgroup.  http://www.cbs.nl/nl/publicaties/artikelen/maatschappij/mobiliteit/artikel_ovg.pdf  http://statline.cbs.nl/StatWeb/table.asp?STB=G1.G2&LA=nl&DM=SLNL&PA=37739&D1=a&D3=a,!0-11&HDR=T
Freight-transport demand (Air_D2)	NIWO collects data about the road freight transport by national transporters. This is done together with CBS in the Transport Survey.  http://www.niwo.nl/ (vervoerenquête)
Road transport fuel consumption (Air_D3)	The consumption is calculated by multiplying the number of vehicles with the yearly kilometres and the specific consumption (litres/km).  http://statline.cbs.nl/StatWeb/table.asp?STB=G1&LA=nl&DM=SLNL&PA=7454&D1=3-25&D2=a,!0-5&HDR=T
Air pollution emissions (Air_P1)	Statistics/calculations: The calculation of emissions by stationary sources is based among others on the emission data in the annual reports of individual companies and also on estimations on the basis of CBS production and energy data. Emissions of

	<p>mobile sources are calculated by multiplying activity data such as vehicle kilometres and fuel consumption with emission factors. The emissions cannot be exactly measured and therefore uncertainties exist in the figures. The size of these uncertainties has been estimated.</p> <p> www.emissieregistratie.nl</p>
<i>Note: PM2.5</i>	<p>TNO estimates the emission of PM_{2.5}. At the moment, TNO is listing and documenting PM₁₀ and PM_{2.5} emissions. That report should include recommendations for PM_{2.5} protocols and estimations methods. The report is not ready yet.</p>
Population-weighted annual average concentration of air pollutants (Air_Ex1)	<p>At different locations (number depending on pollutant) concentration measurements are performed with automatic analysers. This is done at regional, city background and (busy) street locations. The measurement data are sent to a central computer and validated by the Institute for Public Health and the Environment. Unvalidated data are almost immediately available on the internet. Validated data also available per month and location.</p> <p> www.lml.rivm.nl</p>
Policies on ETS exposure (Air_A1)	<p>The Dutch Tobacco Act (Tabakswet) changed in 2002. The Food and Consumer Product Safety Authority (Voedsel en Waren Autoriteit) checks the compliance with the Tobacco Act by specially trained inspectors.</p> <p> http://data.euro.who.int/tobacco/  www.rokenendewet.nl</p>




Noise data






Noise exposure (Noise_Ex1 and Noise_E1)	<p>The combination of data about noise emission and intensity of road, rail and air transport and model calculations result in a national overview of the noise load, reported in noise maps. In 2004 the grid of the maps was refined to 25x25m instead of 100x100m. Noise emission can be linked to maps about population density to calculate exposure and annoyance. There are many uncertainties in this kind of data, for instance not much data about traffic on municipal roads is available, so the traffic intensity on these roads is often estimated.</p> <p> http://betrie.rivm.nl/ipo/</p>
<i>Note: industry noise</i>	<p>The sources of industry noise are very diverse and difficult to calculate. In the future RIVM wants to include data about major noise-producing industries, but that will take a lot of effort. At the moment, a good estimation can be made for half of the industrial zones, but this would take some effort as the data is scattered among different authorities and institutions.</p>






Cardiovascular morbidity/mortality (Noise_E1)	<p>In the Netherlands there is not simply one figure for incidence/prevalence of total heart disease. The data can be estimated using the different registrations, or just from one of the registrations.</p> <p>Prevalence and incidence of <i>ischemic heart disease</i> are calculated from data of several general practitioner registrations: Continuous Morbidity Registration Nijmegen, Second Dutch National Study of General Practitioners, Registration Network General Practitioners, Registration Network University General Practitioners, and Transition Project. The calculated figures are the mean of the data (not weighed, because they think all registrations are equally good).</p> <p> http://www.rivm.nl/vtv/generate/objv2hartvaat_0.htm</p> <p>Prevalence of <i>high blood pressure</i> has been based on two monitoring-studies (Regenboog, MORGEN), but these studies have stopped now. The most recent figures are from 1997. At the moment no monitoring studies are being conducted. The incidence is not calculated.</p> <p> http://www.rivm.nl/vtv/generate/objv2bloeddruk_0.htm</p>
Annoyance by noise and sleep disturbance (Noise_E2)	<p>In the Netherlands, there are 2 sources available concerning annoyance by noise (CBS-data and TNO-data). Unfortunately, the data of these 2 sources cannot easily be compared. The most important difference is the way the annoyance by noise is questioned. The TNO-data are more according to the definitions of the WHO-methodology sheet but are only collected once in five years. The CBS data are less according to the methodology sheet, but yearly data are available.</p> <p>TNO-data: Inventory of Annoyance and Sleep Disturbance by local pollutants. Annoyance and other self-reported effects of environmental pollution (i.e. noise). Face-to-face interviews with electronic questionnaires. Scale from 0-100; above 72 is regarded to be highly annoyed. Between 50 and 72 is defined as annoyed. The results of a new survey by RIVM and TNO will be published in 2004.</p> <p> http://www.xs4all.nl/~rigolett/GV/iv4/index.htm (report 1998)</p> <p>CBS-data: POLS is a Permanent Survey on the Living Conditions (Permanent Onderzoek Leefsituatie), mainly done by face-to-face interviews, with additional written questionnaire. One question is asked about annoyance by noise for several sources: are you annoyed by (e.g. rail, road) in your environment? The answers are YES, SOMETIMES, NO. No question about high annoyance or sleep disturbance.</p> <p> http://statline.cbs.nl/StatWeb/Table.asp?HDR=T&LA=nl&DM=SLNL&PA=03783&D1=0-5&D2=a&STB=G1,G2</p>
National regulations on maximum sound levels for indoor and outdoor leisure events (Noise_A1)	<p>The catering branch is placed under the Environment Protection Act in the Catering Industry Order. As a starting point for the decision whether a publican should submit an acoustic report when he reports to the Catering Industry Regulations Board or applies for a licence, the noise level within his establishment is of importance. The utilisation of the establishment is the determining factor. Local authorities can grant or deny a permit.</p>




Existence and effectiveness of urban or national action plans to solve noise problems (Noise_A2)	Policy monitor: Provinces and municipalities are asked every year if they have a noise policy/plan. The monitor is conducted on voluntary basis, so the authorities are not obliged to cooperate. 11 out of 12 provinces and 47% of municipalities responded in 2002. The monitor will not be continued in the future (after 2002).
Note: Noise Directive (Noise_A3)	<p>Maps already exist at RIVM, but VROM decided that every party has to deliver their own noise maps (municipalities, provinces) and not RIVM. These parties need to have the noise maps ready by 2007. The obligation and method of mapping will be incorporated into the new Noise Nuisance Act in 2007.</p> <p> http://www.vrom.nl/pagina.html?id=7650 (Dossier geluid)</p>

Housing data





Housing Quality Survey (Hous_P1, Ex1, Ex4, Ex5, Ex7)	<p>The Housing Quality Survey is carried out by VROM. Purpose is to gain insight into the quality of the Dutch housing stock and environment. The survey is held approximately once every five years: the first in 1975, the latest in 2000. Every time the same basic issues are included in the survey, although new elements are added as well to cover important new issues. In 2000, the sample included 15,000 dwellings (netto). Four sources of information are used: an inspection of the dwelling and environment by a constructional inspector, telephonic residents questionnaire, digital photos that are made during the inspection, and data on the use of energy. The KWR will certainly be continued in the future as it is an important source of information for monitoring purposes. Data have to be officially requested.</p> <p> http://www.vrom.nl/pagina.html?id=9582</p>
Housing Needs Survey (Hous_Ex1, Ex2, Ex5, Ex7)	<p>The Housing Needs Survey is carried out VROM every four years. The survey gives information on household structure, (desired) housing situation, and moving behaviour. In 2002, 90,000 interviews were taken. Results have been published. Together with the Housing Quality Survey, the Housing Needs Survey provides the basic information about housing in the Netherlands.</p> <p> http://www.vrom.nl/pagina.html?id=9757</p>
Income Panel Study (Hous_P1, Ex2)	<p>Income panel study: Tax Departments, VROM (rent support) and the 'Informatie Beheergroep' (information on financial contribution towards study costs for higher education) yearly provide data on a fixed panel of approximately 220,000 study subjects in approx. 75,000 households.</p> <p> http://statline.cbs.nl/StatWeb/table.asp?STB=G1.G2.G3&LA=nl&DM=SLNL&PA=70102ned&D1=0,2,4,7&D2=0&D4=a,!0-6&HDR=T</p>







POLLS survey	<p>The purpose of the POLLS survey (Permanent Survey on the Living Conditions) is to collect information on the living conditions of the Dutch population. In 1997 several older surveys on living conditions were integrated into the new POLLS survey, that consist of one basis module and several modules on specific issues. Therefore it is easy to anticipate to new policy-relevant questions. The number of respondents vary between 30,000 and 100,000 per year.</p> <p>Description of the study method (in Dutch):</p> <p> http://www.cbs.nl/nl/publicaties/artikelen/maatschappij/leefsituatie/pols-toelichting.pdf  http://www.scp.nl/miss/pols.htm (questionnaires can be downloaded)</p>
POLLS-living study (Hous_ Ex1, Ex4, Ex5, Ex7, E1)	<p>POLLS-Living (Housing Demand Survey WBO). The purpose of the WBO is collecting statistical information on the present, previous and desired housing situation (home and environment) of households and persons. So information is available on many dwelling characteristics, such as type of dwelling, number of rooms and facilities. To collect this info a computer-controlled questionnaire is sent to persons of 18 years and older. In 1998 WBO is integrated into the POLLS survey.</p>
Law on facilities for the handicapped (Hous_ Ex2)	<p>Law on Facilities for the Handicapped (Wvg): The basis of the Wvg is that older and handicapped people should live on their own as long as possible and participate in a normal social environment. The Wvg provides housing adaptation and modification, transport facilities and wheel chairs.</p> <p> http://www.minvws.nl/dossiers/wet_voorzieningen_gehandicaptten_wvg/default.asp</p>
KNMI-weather data (Hous_ Ex3)	<p>The current system of weather stations exists of a total of 55 measuring stations, from which 38 are on land, with an extensive measurement programme.</p> <p> http://www.knmi.nl/voorl/kd/</p>
National Medical Register (Hous_ Ex3)	<p>National Medical Register (LMR): Continuous registration of patients that were discharged from hospital. These data can be recalculated to hospital admissions. Since 1-1-1986 all general and academic hospitals are associated with the National Medical Register. In 1998 99% of the total number of hospital patients that were discharged from hospital in the Netherlands were registered by the LMR. The cancer centre ‘Antoni van Leeuwenhoek’ hospital in Amsterdam does not participate in the LMR, Prismant estimates the contribution of this particular hospital.</p> <p>From 2005, hospitals are implementing a new code (Diagnosis Treatment Code). It is not certain if they will continue to register the ICD codes as well. The future of the registration is therefore uncertain.</p> <p> http://www.prismant.nl/index_order_item.srf?skn=shopitem_id&skv={73D6B9DE-F290-43D8-B84D-FD6DC114E280}</p>
Indoor radon concentration (Hous_ Ex6)	<p>The average radon concentration in dwellings in the Netherlands is low. Nevertheless, the Dutch Health Council estimates that due to current radon levels, 800 extra cases of lung cancer may occur each year. The target of the Dutch government is to maintain the indoor concentration on the level of 1994 (standstill principle). There have been no activities to realize this yet, but in the near future arrangements will be made with the building industry about emission of radiation in new houses. When these arrangements are in force the radon concentration should</p>




	<p>probably be measured more often for monitoring purposes.</p> <p>In 1995 and 1996, radon concentrations were measured in about 1500 Dutch dwellings built between 1985 and 1993 as part of the Dutch national survey on radon in dwellings. Samples of bedrooms, living rooms and crawl spaces were taken. The national mean concentration until 1994 is based on actual measurements in the homes. After 1994, concentrations are estimated, based on data on the replacement of the housing stock and the assumption that the mean concentration in new dwellings is the same as in dwellings that were built in the measurement period. The percentage of 'radon-rich' new estate is rising, and older buildings are pulled down, so there is a slight increase in the mean radon concentration in the total housing stock.</p> <p> http://www.rivm.nl/bibliotheek/rapporten/610058006.html (report 2nd study)</p>
<p><i>Note: National radon action level</i></p>	<p>At the moment there is no national action level. There has been a lot of discussion in politics about the radon concentration in new buildings. In the near future arrangements will be made with the building companies about the radon emission of building materials.</p> <p> http://www.vrom.nl/pagina.html?id=12339 (Dossier radon)</p>
<p>Perception of crime (POLS survey) (Hous_Ex7)</p>	<p>Information on (un)safety, prevention, police assistance, and social participation is collected in the POLS-module Law and Participation. Questions are included about whether one has ever been a victim of crime, fear of crime and legal assistance. Approximately 5000 respondents every year. Specific questions are: Do you ever feel unsafe (in your own home)? Are there in this district or neighbourhood places or streets you do not want to go to at night? The survey is mainly done by face-to-face interviews, with additional written questionnaire.</p> <p> http://statline.cbs.nl/StatWeb/table.asp?STB=G1.G2&LA=nl&DM=SLNL&PA=70051ned&D1=0.4&D2=0-1.6&D3=a&HDR=T</p> <p> http://statline.cbs.nl/StatWeb/table.asp?STB=G1.G2&LA=nl&DM=SLNL&PA=37775&D1=a&D3=a&HDR=T</p>
<p>Crime (Police monitor) (Hous_Ex7)</p>	<p>The Police Monitor is a national population survey about crime, unsafe situations/feelings, prevention behaviour of citizens and the quality of police performance. The survey was held once every 2 years, but since 2002 it is held every year. The results of this survey are compared to information from earlier measurements. In all of the 25 police districts 1000 people are interviewed by telephone. Every district can oversample their district and interview extra persons to get more data. In 2001: more than 88,000 respondents.</p> <p> http://www.minbzk.nl/contents/pages/8827/rapportpmb2004.pdf (Report 2004)</p>

Accidents in and around the home (Hous_E1)	<p>Injury Surveillance System (LIS): Information on patients that are treated at the ER of a hospital is registered by doctors and nurses. These local data are sent to the central database of the Consumer Safety Institute. In 2002 A&E Departments of fourteen hospitals participated in the registration. They register information from patients treated at the emergency room of their hospital. In total approximately 210,000 patients per year. But the distribution of hospitals in the Netherlands is not complete. No data from hospitals in 1 of the provinces (Friesland). On the basis of the National Medical Registration the LIS figures are heightened to national figures. The figures are likely to be an underestimation of the real figures because it is not always clear what the cause of the accident is.</p> <p> http://www.veiligheid.nl/csi/websiteveiligheid.nsf/wwwVwContent/11ongevalscijfersalgemeenbronnen.htm</p>
Number of fatalities from external causes in and around the house (Hous_E1)	<p>Causes of death statistics: A physician determines the cause of death and reports via the Registry of Births, Deaths and Marriages (Burgerlijke Stand) to CBS. The primary cause of death is registered, but in the case of multiple diseases this can be complicated. Secondary causes of death are also registered. Cases are included if the deceased person was registered at a Dutch address at the time of death. Causes of death are coded according to ICD-10. Also registered are sex, age and address of the deceased.</p> <p> http://statline.cbs.nl/StatWeb/table.asp?HDR=T&LA=nl&DM=SLNL&PA=37683&D1=92&D4=a.10&STB=G1.G2.G3</p>
Number of dwelling fires (Hous_E1)	<p>CBS collects data about all fires that require assistance from the municipal fire brigade.</p> <p> http://statline.cbs.nl/StatWeb/table.asp?STB=G1.G2&LA=nl&DM=SLNL&PA=37511&D1=24-35&D2=0&D3=a.10-1&HDR=T</p>





Traffic data






Number of Passenger cars (Traf_S1)	<p>The figures are based on the vehicle registration of the RDW Vehicle Technology and Information Centre. On the basis of this register, counts are made of vehicles with owner-obliged registration number included in the database at 1st January of that year.</p> <p> http://statline.cbs.nl/StatWeb/table.asp?STB=G1.G2&LA=nl&DM=SLNL&PA=7374hvv&D1=2&D3=a.10-6&HDR=T</p>
Passenger car first registration (Traf_S1)	<p>The Automobile Manufacturers Association (ACEA) collects data on new motor vehicle re-registrations for all European countries.</p> <p> http://www.acea.be/ACEA/auto_data.html</p>
<i>Note: Traffic information on the Internet</i>	<p>The Institute for Road Safety Research (SWOV) presents information and data on road safety issues (about almost all traffic indicators) on their Website:</p> <p> http://www.swov.nl/en/kennisbank/index.htm (knowledge base in English)  http://www.swov.nl/cognos/cgi-bin/ppdscgi.exe (data also in English)</p>
Road accidents, mortality (Traf_S2, Traf_E1)	<p>Registration of road accidents is done by the police. They send an electronic copy of the registration form to the Basic Data department of the national Transport Research Centre (AVV/BG). This registration is not always complete. In 1997 V&W and CBS published the first, official estimates of the numbers of victims for the years 1994 -</p>

	<p>1996. For this, SWOV developed extrapolation methods to compare the data from different sources with each other.</p> <p> http://www.swov.nl/cognos/cgi-bin/ppdscgi.exe</p>
Speeding (Traf_S3)	<p>For national roads, the Transport Research Centre's system measures both the speeds of passing vehicles and the traffic volumes (at c. 100 locations) per vehicle type. The measurement period is 60 minutes, whereby the average speed per hour per type can be obtained. Data about municipal roads are only available for 1994-95 when a specially designed survey was held, and for 80-100km roads data is available for 1996.</p> <p> http://www.swov.nl/nl/kennisbank/90_gegevensbronnen/inhoud/tabel_percentage_overtreders.htm (speeding on national roads)</p>
Person time spent on the road (Traf_Ex1)	<p>Since 1978 CBS carries out a yearly survey: National Travel Survey. This survey was renewed in 1999. It is set up as a relatively easy written survey with additional motivation of respondents (that are reachable by phone) and if necessary a more detailed survey can be done to collect more information per subgroup. Many mistakes can be made when filling in a trip diary. Trips are forgotten (too short, unimportant, before-and-after transport in public transport trips), they are deliberately omitted (nobody else is allowed to know), the times of day are rounded off, the distance travelled is estimated incorrectly, etc. In 1978, SWOV checked the distances in the questionnaires. This resulted in correction factors of -8% for car trips and -20% for bicycle trips. CBS uses these factors to calculate the total distances travelled in the Netherlands.</p> <p> http://statline.cbs.nl/StatWeb/table.asp?LYR=G4:0&LA=nl&DM=SLNL&PA=37637&D1=2&D2=0&D3=0&D4=a&D6=a;!0-11&HDR=T&STB=G1,G2,G3,G5</p>
Use of safety vehicle device (Traf_Ex2)	<p>A study is carried out under authority of the Transport Research Centre (AVV). At the moment it is done every two years (last one in 2002). In 2002 information was collected in every police region (total of 25) in the Netherlands. At 84 locations, on roads of different type, in- and outside the built-up area, persons in passenger cars were checked for seat belt and/or child restraint usage. A questionnaire was handed out when possible with more in-depth questions about seat belt and child restraint use, and questions about the 'equipment' of the car. Number of motorcycle occupants that properly used the helmet was last measured in the 1980s, so no recent data is available.</p> <p> http://www.swov.nl/nl/kennisbank/90_gegevensbronnen/inhoud/gegevens_gordel.htm (seat belt and child restraint data)</p> <p> http://www.rws-avv.nl/pls/portal30/docs/7636.PDF (report 2002)</p>
Years of expected life lost due to traffic accidents (Traf_E2)	<p>For the Netherlands, years of life lost are calculated by multiplying the number of disease specific deaths per year with the remaining life expectancy at the specific age. The number of deaths is taken from the death statistics of CBS, the age specific life expectancy from the survival table of the Netherlands in 2000.</p> <p> http://www.rivm.nl/vtv/data/kompas/gezondheidstoestand/ziekte/detailcijfers_kolommentabel.htm#p1</p>
Injury rate (Traf_E3)	<p>Data are available from a registration by the police (number of persons involved, the seriousness of the injury, kind of traffic (for instance pedestrian, cyclist etc), age of</p>


	<p>victim, location, type of road). Data can be heightened to 'real' numbers by comparing them to other sources:</p> <ul style="list-style-type: none"> · The National Medical Register, which contains only information on hospital admissions but has detailed information on diagnosis. · Injury Surveillance System, which contains information about people visiting the ER. This source can also be used as independent source of information on injuries. The greater the injury severity, the more complete the registration. The rate of registration for injuries, which are treated at first aid is about 15%, the registration rate for injuries for which hospital admission is necessary is about 60%. <p> http://www.swov.nl/cognos/cgi-bin/ppdscgi.exe</p>
DALYs lost to traffic accidents (Traf_E4)	<p>DALYs are calculated by RIVM without using age weights. Dutch disability weights have been estimated in a panel study among health care professionals. Traffic injuries are only included if they are still present after one year. There is much discussion about the calculation method and reliability of the calculated amount of DALYs lost to traffic accidents. The</p> <p>DALYs that have been calculated are most likely an underestimation of the real number. Next year, the Academic Medical Centre of Amsterdam University and the Erasmus University will recalculate the DALYs with other data about accidents. This will probably give a better estimation of the actual numbers. If so, RIVM will adopt their method of calculation in the future.</p> <p> http://www.rivm.nl/vtv/data/kompas/gezondheidstoestand/svm/daly/daly_huidig_48ziekten.htm</p>
Alcohol deaths (Traf_E5)	<p>Not all people involved in a road accident are checked on alcohol consumption. SWOV estimates that half of alcohol deaths is missed by the police.</p> <p> http://www.swov.nl/cognos/cgi-bin/ppdscgi.exe</p>





Water and Sanitation data

Wastewater treatment (Watsan_P1)	<p>Data are collected by a joint Eurostat/OECD questionnaire on the state of the environment. Data collection is expected to be every third year. Data are collected from national statistical offices.</p> <p> http://themes.eea.eu.int/Specific_media/water/indicators/wastewater/yir99e8urban_waste.pdf</p>
Recreational water compliance (Watsan_S1)	<p>The district water boards perform measurements once every two weeks during bathing season (May-October). They measure the concentrations of Coli and faecal streptococci. At the end of the season RIZA tests the results with the European standards for bathing water and reports to the European Commission.</p> <p> http://dataservice.eea.eu.int/dataservice/metadetails.asp?id=683 (EEA data)  http://europa.eu.int/water/water-bathing/report/nl.html (EU Bathing Water Report)</p>
Drinking water compliance (Watsan_S2)	<p>The checking of the drinking water quality is done and reported by the waterworks and is regulated by law in the Regulation on Waterworks. Waterworks report their measurement programs to the VROM-Inspection and RIVM process the data into a yearly report. Every 3 years RIVM reports to the EU.</p> <p> http://www.rivm.nl/bibliotheek/rapporten/703719005.pdf (Dutch report 2002)</p>
Safe drinking water	WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation


(Watsan_Ex1)	<p>Coverage Estimates. Data was found for 1990 and 2000 and in both years the percentage of the population with access to an adequate amount of safe drinking water was 99,9%. For the intervening years, this coverage has been 99,9% as well. Access to safe drinking water is no problem in the Netherlands since several decades.</p> <p> http://www.wssinfo.org/en/pdf/country/netherlands_water1.pdf (report 2000)</p>
Waterborne diseases (Watsan_E1)	<p>Yearly questionnaires are sent to all Area Health Authorities (GGD) and Provinces to make an inventory of the number of outbreaks of diseases probably related to recreation in surface waters. They also have to report the actions that were taken to prevent further cases. Not all incidents are reported to the authorities (for instance mild cases) and not all water-related cases will be connected to water (food is often thought to be the cause), so the real number of incidents will be higher. This year a new study is started (PLONZ), in which water samples will be taken if a case reported to a GGD is suspected to be related with water quality. The RIVM will study what micro-organisms caused which disease (diagnosed by a doctor). Maybe this study will continue in the future.</p> <p> http://www.rivm.nl/milieuennatuurcompendium/nl/i-nl-0347-03.html  http://www.rivm.nl/infectieziektenbulletin/bul1505/art_klachten.html</p>
Management of bathing waters (Watsan_A1)	<p>Not implemented yet. In the Netherlands the ANWB gives out blue flags (Blauwe Vlag) to beaches that comply with the European Bathing Water Directive. The Province can prohibit swimming in specific bathing water if exceeding of the standards has been detected.</p> <p> http://www.anwb.nl/servlet/Satellite?pagename=ANWB/Render&c=Page&cid=108442465043  (Blue flags 2004 in the Netherlands)</p>
Water safety plans (Watsan_A2)	<p>The new (2004) WHO Drinking Water Guideline is not yet incorporated in Dutch law. But the requirements described by the WHO for a water safety plan are mostly fulfilled in the Netherlands, but not under that name. The WHO guidelines are more important for countries with a lower drinking water quality.</p>

Chemical Incidents data

Industrial facilities under EU 'Seveso II' directive (Chem_P1, A1)	<p>In the Netherlands, the Seveso directive has been implemented in the Prevention of Major Accidents Decree (BRZO), which has been renewed in 1999. BRZO establishments need to comply with safety guidelines as set up and checked by the Government. Every year, AVIV Research Bureau makes an inventory of BRZO-establishments in the Netherlands (based on the existing list of the previous years). RIVM collects and reports the data.</p> <p> http://www.rivm.nl/milieu/risicos/externe_veiligheid/BRZO/BRZO_bedrijven_lokatie.jsp (list 2002)</p>
Land-use planning (Chem_A1)	<p>Establishments with a lot of dangerous substances have to make a Quantitative Risk Analysis in which they calculate the risks with respect to houses, schools etc. in the neighbourhood. If the risk is too high, they have to take measures to lower the risk.</p>

Chemical incidents register (Chem_A2)	<p>Notifications of chemical incidents in fixed facilities to EU are required according to SEVESO II and carried out. The Labour Inspectorate reports the incidents to the Ministry of Social Affairs and Employment that reports it to EU. EU includes the data in the MARS (Major Accident Reporting System) database. Also available in the Netherlands is a risk register, which includes the risk evaluation of establishments, transport routes and pipelines. This register is managed by RIVM-CEV.</p> <p> http://www.slagenvoorveiligheid.nl/vervolg.asp?thema=5  http://mahbsrv.jrc.it/mars/Default.html (MARS database)</p>
Government Preparedness (Chem_A3)	<p>The Ministry of Housing, Spatial Planning and the Environment is the co-ordinating ministry with respect to external safety issues. The National Advisory Body is called “BOTmi”. This is the policy supporting team regarding environmental incidents. They are on call 24hr a day to give advice on the risks of chemical substances at incidents. The establishments need to have a Health/Environmental Plan in case of an incident, but there are also such plans available at Municipal, Provincial and Governmental scale. ER Guidelines are included in the ‘intervention levels dangerous substances’. A public alerting system is available.</p> <p> http://www.vrom.nl/pagina.html?id=9255 (Dossier Externe Veiligheid)  http://www.vrom.nl/pagina.html?id=12011 (dossier Crises en Rampen)</p>

Radiation data

Skin Cancer (Rad_E1)	<p>The Netherlands Cancer Registry is a nation-wide cancer registry, i.e. a systematic collection of data on all malignant neoplasms occurring in a geographically defined population. Nine regional cancer registries receive lists of newly diagnosed cases on a regular basis from the pathology and haematology departments in their region. In addition, lists of all hospitalised cancer patients are obtained. Following notification, the medical records of newly diagnosed patients (and tumours) are collected and relevant information for the cancer registry is abstracted by trained registration clerks and submitted to the regional cancer registry. After extensive checks for inconsistencies and duplicate records the data are entered into the national database. Basal cell carcinomas of the skin and carcinoma in situ of the cervix uteri are excluded. Basal cell carcinomas are usually treated outside the hospital, and are therefore excluded from the registry. In the south east of the Netherlands a complete registration of basal cell carcinomas is available. On the basis of these regional data combined with national data about other skin cancers, estimations are made for national figures of basal cell carcinomas.</p> <p> http://www.ikc.nl/vvik/kankerregistratie/kankerregistratie.html</p>
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Effective environmental monitoring of radiation (Rad_A1)	<p>RIVM manages the National Radioactivity Monitoring Network (NMR) and carries out sensitive determinations of radioactivity in air and precipitation. The food measurements are not conform the EU standards: a standard food is not useful because a lot of import food is eaten in the Netherlands. Some food is incidentally checked. The Netherlands has no dense or sparse network, because it is such a small country (it is all seen as one region).</p> <p> http://www.rivm.nl/milieu/risicos/radioactiviteit_en_straling/Stralingsmetingen_Nederland.jsp (yearly reports in English)</p>
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Appendix 3: Summary of the readiness of indicators

- 1 = Ready for immediate implementation
 2 = Ready for implementation by the end of 2004
 3 = Ready for implementation by the end of 2005
 4 = Ready for implementation after 2006

Indicators ready for immediate implementation

Indicator ID	Title	Overall Readiness
Air_D1	Passengers-kilometres by mode of transport	1
Air_D2	Freight-transport demand (Tonne-kilometres)	1
Air_D3	Road transport fuel consumption	1
Air_P1	Air pollution emissions (SO ₂ , PM ₁₀ , PM _{2.5} , NO _x , CO, NMVOC)	1
Air_Ex1	Population-weighted annual average concentration of air pollutants (NO ₂ , PM ₁₀ , PM _{2.5} , SO ₂ , O ₃)	1
Air_E1	Years of expected life lost	1
Air_A1	Policies on environmental tobacco smoke (ETS) exposure	1
Noise_Ex1	Population exposed to various noise levels (Lden and Lnight) by different sources	1
Noise_E2	Self reported noise health effects – Annoyance and sleep disturbance	1
Noise_A1	National regulations on maximum sound levels for indoor and outdoor leisure events	1
Noise_A2	Existence and effectiveness of urban or national action plans to solve noise problems	1
Hous_EX7	Crime/Perception of crime	1
Hous_E1	Housing safety and accidents	1-2*
Traf_D1	Passengers-kilometres by mode of transport (Air_D1)	1
Traf_S1	Age of vehicle fleet	1
Traf_S2	Road accident rate	1
Traf_S3	Speed limit exceedances	1(national roads)-4(other roads) [#]
Traf_Ex1	Person time spent on the road	1
Traf_Ex2	Use of safety vehicle device	1-4 (helmet use) [#]
Traf_E1	Mortality due to transport accidents	1
Traf_E2	Potential Years of Life Lost	1
Traf_E3	Injury rate	1
Traf_E4	DALY lost for road accidents	1
Traf_E5	Mortality due to drinking driving	1
WatSan_P1	Wastewater treatment	1
WatSan_S2	Drinking water compliance	1
WatSan_Ex1	Safe drinking waters	1
WatSan_E1	Outbreak of water-borne diseases	1
Chem_P1	Industrial facilities under EU 'Seveso II' directive	1
Chem_A1	Regulatory requirements for land-use planning	1
Chem_A2	Chemical incidents register	1
Chem_A3	Government preparedness	1
Rad_E1	Incidence of skin cancer	1
Rad_A1	Effective environmental monitoring of radiation	1

* The injury data have to be requested

[#] No data for speeding on other than national roads and helmet use of motorcyclists; it is not known when new studies will be conducted

Indicators ready for implementation by the end of 2004

Indicator ID	Title	Overall Readiness
Noise_E1	Attributable fraction of risk of cardiovascular morbidity/mortality to noise exposure	2
Hous_P1	Affordability to buy dwelling	2
Hous_EX1	Crowding	2
Hous_EX2	Accessibility	2
Hous_EX3	Extremes of Indoor Air Temperature	2
Hous_EX4	Dampness/Mould Growth	2
Hous_EX5	Household hygiene	2
WatSan_S1	Recreational water compliance	2

Note: these data have to be officially requested

Indicators ready for implementation by the end of 2005

Indicator ID	Title	Overall Readiness
Hous_EX6	Indoor radon in dwellings	3*

* A new study is conducted next year

Indicators ready for implementation after 2006

Indicator ID	Title	Overall Readiness
Noise_A3	Willingness to enforce and implement the environmental noise EU Directive and to apply noise abatement measures	4
WatSan_A1	Management of bathing waters	?
WatSan_A2	Water safety plans	?

Note: the EU Directives/Guidelines have not been implemented yet in Dutch laws and it is not known when this will happen

Appendix 4: Usefulness of indicators for NL

The steering committee decided on the usefulness of the indicators for the Netherlands. They divided all indicators into 2 groups: a *core set*, which would be mandatory to collect for all Member States, and an *extended set*, of which the collection could occur on a voluntary basis. This extended set was further divided into useful and not useful for the Netherlands. Besides that, two indicators were found not useful at all for inclusion in both sets. In the following table the indicators in each set are presented.

Core set of indicators according to the Dutch steering committee:

Air_P1	Air pollution emissions (SO ₂ , PM ₁₀ , PM _{2.5} , NO _x , CO, NMVOC)
Air_D1	Passengers-kilometres by mode of transport
Air_D2	Freight-transport demand (Tonne-kilometres)
Air_D3	Road transport fuel consumption
Air_Ex1	Population-weighted annual average concentration of air pollutants (NO ₂ , PM ₁₀ , PM _{2.5} , SO ₂ , O ₃)
Air_A1	Policies on environmental tobacco smoke (ETS) exposure
Noise_Ex1	Population exposed to various noise levels (Lden and Lnight) by different sources
Noise_E2	Self reported noise health effects – Annoyance and sleep disturbance
Noise_A2	Existence and effectiveness of urban or national action plans to solve noise problems
Hous_P1	Affordability to buy dwelling
Hous_EX3	Extremes of Indoor Air Temperature
Hous_EX4	Dampness/Mould Growth
Hous_EX6	Indoor radon in dwellings
Hous_EX7	Crime/Perception of crime
Hous_E1	Housing safety and accidents
Traf_D1	Passengers-kilometres by mode of transport (Air_D1)
Traf_S1	Age of vehicle fleet
Traf_S2	Road accident rate
Traf_S3	Speed limit exceedances
Traf_Ex1	Person time spent on the road
Traf_Ex2	Use of safety vehicle device
Traf_E1	Mortality due to transport accidents
Traf_E2	Potential Years of Life Lost
Traf_E3	Injury rate
Traf_E4	DALY lost for road accidents
Traf_E5	Mortality due to drinking driving
WatSan_S1	Recreational water compliance
WatSan_S2	Drinking water compliance
Chem_A1	Regulatory requirements for land-use planning
Chem_A2	Chemical incidents register
Chem_A3	Government preparedness
Chem_P1	Industrial facilities under EU ‘Seveso II’ directive
Rad_A1	Effective environmental monitoring of radiation
Rad_E1	Incidence of skin cancer

Extended set of indicators according to the Dutch Steering Committee

Air_E1	Years of expected life lost ^x
Noise_E1	Attributable fraction of risk of cardiovascular morbidity/mortality to noise exposure ^x
Hous_EX1	Crowding ^x
Hous_EX2	Accessibility ^x
WatSan_E1	Outbreak of water-borne diseases ^x
WatSan_A1	Management of bathing waters ^x
WatSan_A2	Water safety plans ^x
Hous_EX5	Household hygiene
WatSan_P1	Wastewater treatment
WatSan_Ex1	Safe drinking waters

x Important for the Netherlands

Not included/ not useful for any country

Noise_A1	National regulations on maximum sound levels for indoor and outdoor leisure events*
Noise_A3	Willingness to enforce and implement the environmental noise EU Directive and to apply noise abatement measures [^]

* Only at regional/local level, not national

[^] Must be implemented anyhow

Appendix 5: Indicator definitions

The following tables contain the definitions of the indicators as used in this pilot study. These definitions were formulated by WHO for the specific purpose of this study. On the basis of the pilot study results in the different countries, these definitions may have been changed.

Air

Air_P1	Emissions of air pollutants	DPSEEA
<i>Issue</i>	Air Quality	
<i>Definition of indicator</i>	Total annual emissions of SO ₂ , PM ₁₀ , PM _{2.5} , NO _x , VOC by the following economic sectors: industry-process and energy, energy industry, domestic and services, transport, agriculture.	
<i>Underlying definitions and concepts</i>	<p>The indicator describes emissions of a selection of pollutants or precursors of pollutants, which form a potential risk to health. Part of the pollution is directly emitted into the atmosphere (such as SO₂), other pollutants are formed by chemical reactions in the atmosphere (such as secondary PM and ozone). (In some cases, precursor emissions might be aggregated using appropriate weight factors.)</p> <p>Sectors are according to the NFR reporting system and includes the main sectors such as</p> <ul style="list-style-type: none"> - Industry-process and energy: combustion in manufacturing industry, production processes, extraction and distribution of fossil fuels, solvent and other product use, waste treatment and disposal - Energy industry: combustion in energy and transformation industry - Domestic and services - Transport: road transport, other mobile sources and machinery - Agriculture 	

Air_Ex1	Exposure to ambient air pollutants (urban)	DPSEEA
<i>Issue</i>	Air Quality	
<i>Definition of indicator</i>	<p>Population – weighted exposure to selected air pollutants during one year in selected population. The indicator consists of sub-indicators, representing population-weighted exposure to selected air pollutants.</p> <p>Pollutants and averaging period:</p> <p>NO₂ annual average; size of population exposed (in 1000)</p> <p>SO₂ annual average; size of population exposed (in 1000)</p> <p>O₃ – distribution of daily values of max. 8 hour O₃ concentration: %of measurement days with max 8h mean O₃: size of population exposed (in 1000)</p> <ol style="list-style-type: none"> 1. <40 µg/m³ 2. [40- 60] µg/m³ 3. [60- 80] µg/m³ 4. [80- 100] µg/m³ 5. [100- 120] µg/m³ 6. [120-160] µg/m³ 7. > 160 µg/m³ <p>PM₁₀ annual average; size of population exposed (in 1000)</p> <p>PM_{2.5} annual average size of population exposed (in 1000)</p> <p>TSP and BS only to be used if PM₁₀ and PM_{2.5} are not available</p>	

<i>Underlying definitions and concepts</i>	<p>This indicator is based on the assumption that outdoor levels of air pollution in urban and rural areas may represent a significant health risk. The ambient concentrations of four selected pollutants (NO₂, SO₂, O₃ and PM) should provide a good picture of air quality and related risk to health. Each sub-indicator is based on the assumption that an increase of the incidence of health outcomes in a given population is proportional to the pollutant concentration.</p> <p>The indicators relate to the calendar year.</p> <p>Mean annual concentration: mean concentration of the pollutant of concern, averaged over all measurements conducted in the year. Data coverage should be at least 75% distributed throughout all seasons.</p> <p>Population weighting: based on measurements at city background monitoring sites or other assessment techniques the pollution concentration is estimated for a certain area A. The number of people living in this area is the required and is, ideally, based on the actual number of people living there. If this number is not available (e.g. due to insufficient spatial resolution in the population data), the fraction of the urban built-up area in the area A is taken as the estimate of the fraction of the population in a city living in area A. The exposure of rural population may also be estimated using rural monitoring sites or modelling.</p> <p>Urban (cities) area: The built-up area of a municipality. There is no international agreement on the minimum size required. In international studies urban areas with a population above 100,000 inhabitants are usually included, sometimes extended with a representative sample of urban areas with 20,000 to 100,000 inhabitants.</p>
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Air_E1	Years of Expected Life Lost due to deaths in the first year	DPSEEA
<i>Issue</i>	Air quality	
<i>Definition of indicator</i>	Years of Expected Life Lost (YLL) due to deaths attributed to the long-term exposure to fine particulate matter in the first year of follow-up	
<i>Underlying definitions and concepts</i>	<p>The indicator is based on the following definitions:</p> <p>Life expectancy at age x: average number of years of life remaining to persons who survive to age x</p> <p>Years of Life Lost: A measure of the relative impact of a risk on society or groups of society. Provides information on the difference between the life expectancy of two scenarios with different mortality risk.</p> <p>Long-term exposure: The calculation is based on the health risk linked to long-term exposure to air pollution.</p> <p>Fine particulate matter: PM_{2.5}</p>	

Air_A1	Policies to reduce environmental tobacco smoke exposure	DPSEEA
<i>Issue</i>	Indoor air, built-in environment	
<i>Definition of indicator</i>	Composite index of capability for implementing policies to reduce environmental tobacco smoke exposure and promoting smoke free areas	
<i>Underlying definitions and concepts</i>	<p>The existence, implementation and enforcement of instruments and measures to prohibit smoking in indoor environment (facility, room, etc.)</p> <p>The existence of instruments to restrict smoking in designated areas with separate exhaust ventilation</p>	
<i>Computation</i>	<p>The index is computed as a sum of 10 subset variables</p> <p>SUM (Ci)</p> <p>where Ci is the score for component i.</p> <p>For each component the following scoring is accepted:</p> <p>0 – Not existing, not clearly stated</p> <p>1 – Clearly stated, partly (not) implemented or enforced</p> <p>2 – Clearly stated and obeyed, implemented and enforced</p> <p>The full list of components (Ci) is as follows:</p>	

- | |
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| <ol style="list-style-type: none">1. Smoking prohibited/restricted in schools2. Smoking prohibited/ restricted in day-care centres3. Smoking prohibited/ restricted in governmental offices and other public buildings4. Smoking prohibited/restricted in public traffic vehicles in urban areas5. Smoking prohibited/restricted in public traffic vehicles – long distance6. Smoking prohibited/restricted in hospitals7. Smoking prohibited/restricted in work places8. Smoking prohibited/restricted in cinemas, theatres, museums etc9. Smoking prohibited/ restricted in bars, restaurants10. Advertisement of cigarettes prohibited |
|--|

Noise

Noise_Ex1	Population exposed to various noise levels ranges per source	DPSEEA
<i>Issue</i>	Noise	
<i>Definition of indicator</i>	<p>This indicator is in line with the requirements of the European directive 2002/49/EC of the European Parliament and of the Council of 25 June 2002</p> <p>Estimated population living in dwellings that are exposed to the noise ranges of values from different sources of environmental noise in urban areas and along major transport infrastructures</p> <p>Taking into consideration the existing situation on European countries regarding data collection and the diversity of methodologies and models, the data needed for computing this indicator can be derived from any of the models existing in countries. In addition if a country has only the exposure for cut-off points (e.g. high noise levels) they should report these data and explain this in a special note.</p> <p>When models are used to provide the data, the model assumptions and calculation method should be described in detail.</p>	
<i>Underlying definitions and concepts</i>	<p>This indicator is a basic one for noise and health, it allows assessing exposure and has a direct connection with the other indicators.</p> <p>The ranges of values are the ones from the European Directive (2002/49/EC of 29 June 2002) as well as the noise sources (road traffic, Air traffic, Railway traffic and Industry).</p>	

Noise_E1	Cardiovascular morbidity and mortality attributable to environmental noise exposure	DPSEEA
<i>Issue</i>	Noise	
<i>Definition of indicator</i>	<p>Number of cases of cardiovascular problems attributable to noise exposure</p> <p>Number of deaths attributable to noise exposure.</p>	
<i>Underlying definitions and concepts</i>	<p>This indicator is based on the evidence of experimental noise effects research carried out in the laboratory that noise acts as a stressor on the human organism.</p> <p>Epidemiological data exists for road traffic noise and cardiovascular endpoints, including high blood pressure and ischaemic heart diseases.</p> <p>This template is based on 2 examples of calculation presented in the annex and it is a simplified model was used because it applies to very high noise levels.</p> <p>For a more detailed calculation for the different calculation please use the Dutch methodology described in the annex.</p> <p>Concepts:</p> <ol style="list-style-type: none"> 1) The biological plausibility of an increase in cardiovascular risk due to noise exposure has been shown in numerous noise-stress experiments. 2) There is qualitative evidence from many epidemiological noise studies that persistent noise exposure increases the risk for cardiovascular diseases. 3) Quantitative estimates of the relative risk for highly exposed subjects can be taken from a few reasonably good studies (current status). 4) The development of a continuous risk function is a dynamic process that incorporates new results of present and future studies (future status). 5) Calculation of the attributable fraction (AR%) and the population attributable risk percentage (PAR%). 	

Noise_E2	Self reported noise health effects - Annoyance and sleep disturbance	DPSEEA
<i>Issue</i>	Noise	
<i>Definition of indicator</i>	<p>The easiest effects of noise to assess are annoyance and self-reported sleep disturbance, because these effects are measured by standardised questions in a population survey. They are not the most serious and health end points but they give a good picture of the existing situation and alert for more serious problems.</p> <p>Percentage of the population reporting annoyance by certain sources of environmental noise</p> <p>Percentage of the population with self-reported sleep disturbance by environmental noise</p>	
<i>Underlying definitions and concepts</i>	<p>The indicator is based on the assumption that exposure to high levels of noise originated from different sources, e.g. traffic (road, railway and air), industry, entertainment facilities, induce general annoyance and sleep disturbance. Underlying definitions are:</p> <p>Annoyance: ‘a feeling of displeasure associated with any agent or condition, known or believed by an individual or group to adversely affect them’ (cf. Guidelines for Community Noise: B. Berglund, T. Lindvall, D. Schwela Ed, WHO, Geneva, 1999). It can be assessed by standardised questionnaires.</p> <p>Sleep disturbance: self-reported noise-induced sleep disturbance and increase of noise-induced awakenings during the habitual sleeping time. Sleep disturbance is seen as a health effect on its own, but may cause also after effects like mood changes, fatigue (and therewith related accidents) and other impaired functions.</p> <p>Population: total population surveyed</p>	

Noise_A1	Existing national legislation regulations on maximum sound levels outdoor and indoor leisure events	DPSEEA
<i>Issue</i>	Noise	
<i>Definition of indicator</i>	Composite index of ability to implement regulations, restrictions and noise abatement measures in leisure activities that involve high music levels for indoor and outdoor leisure events.	
<i>Underlying definitions and concepts</i>	<p>The existence, implementation and enforcement of regulatory instruments to control the exposure in leisure activities</p> <p>Has the member state adopted sound emission levels at open-air concerts or/and discotheques? What level?</p> <p>Has the member state adopted sound emission levels at discotheques? What level?</p>	
<i>Computation</i>	<p>The index is computed as a sum of the following 6 variables (for indoor and for outdoor separated)</p> <p>SUM (Ci)</p> <p>Where: i is the legislation</p> <p>and Ci is the score for component i</p> <p>For each component Ci the following scoring is accepted:</p> <p>0 – Not existing, not clearly stated</p> <p>1 – Clearly stated, partly (not) implemented or enforced;</p> <p>2 – Clearly stated and obeyed, implemented and enforced</p> <p>The full list of components (Ci) is as follows:</p> <p>1 Legislation for maximum sound levels in discothèques, bars and other similar settlements</p> <p>2 Building regulations for acoustical insulation of discothèques, bars and other similar settlements</p> <p>3.Regulations for music appliances (walkmans, Discmans, ..) and computer games and for outdoor:</p> <p>4 Legislation for open-air events, fairs markets and similar</p> <p>5.Regulations for music concerts</p> <p>6 Local authorities required to deal with noise complaints</p>	

Noise_A2	Existence and effectiveness of Urban, National or Action plans for noise	DPSEEA
<i>Issue</i>	Noise	
<i>Definition of indicator</i>	<p>Noise is analysed in almost every country has an environmental problem, but its consideration as a health determinant is still not always visible.</p> <ul style="list-style-type: none"> - Existence and efficiency of urban plan or another tool regarding acoustical aspects at local, municipal or regional level (e.g zoning) - Consideration of noise on the NEHAPs (National Environmental Health Action Plans) - Consideration of noise as a health determinant in any Plan related to public health. 	
<i>Computation</i>	<p>This indicator is calculated by the description of the existing plan and if it is:</p> <p>0 – Not existing, not clearly stated 1 – Clearly stated, partly (not) implemented or enforced; 2 – Clearly stated and obeyed, implemented and enforced</p> <p>Population living in an area with acoustical planning / total population of the municipality or city in question</p>	

Noise_A3	Willingness to enforce and implement the Environmental noise European Directive and to apply noise abatement measures	DPSEEA
<i>Issue</i>	Noise	
<i>Definition of indicator</i>	This indicator shows the willingness of a country to enforce the European noise directive and solve its noise problems.	
<i>Underlying definitions and concepts</i>	<p>Population living in an area covered with a noise map / total population living in areas that should be covered with a noise map according to the EC directive 2002/49/EC.</p> <p>This indicator is composed of two figures, showing how much the countries are following the directive and the percentage of population covered by a noise map.</p>	

Housing and Settlements

Hous_P1	Affordability	DPSEEA
<i>Issue</i>	Housing and Settlements – Use and Economy	
<i>Definition of indicator</i>	Affordability: Proportion of population having an income below the income level that is needed to purchase the construction of a 60 square meter residential building of normal quality	
<i>Underlying definitions and concepts</i>	<p>The indicator deals with the general affordability of housing. It is based on the assumption that 15% of the income over a time span of 25 years should be sufficient for such an investment. This does not include the cost of purchasing the ground, which may differ extremely within countries, regions and cities.</p> <p>The indicator requires the existence of nationally defined poverty levels and the ability to document percentiles of the population living below such levels. It further requires the ability to statistically define affordability of housing, i.e. the number of annual average household incomes necessary to afford the construction or purchase of a dwelling with a total floor area of 60 square meters.</p>	
<i>Computation</i>	<p>The indicator can be computed on three levels:</p> <p>1) A (Affordability) = % of households or persons with an income level below S $S = 60 \times C / 25 \times 0.15$ S being the annual income level that is needed to afford the construction of a 60 square meter dwelling;</p> <p>2) P (Poverty) = % of households or persons affected by relative or absolute poverty levels (according to national definitions)</p> <p>3) PA (Poverty affordability) = PL / C PL = annual income defined as relative or absolute poverty level C = cost of the construction of one square meter of residential building of standard quality</p>	

Hous_Ex1	Crowding	DPSEEA
<i>Issue</i>	Housing and Settlements – Use and Economy	
<i>Definition of indicator</i>	Crowding – Proportion of households living in crowded housing conditions	
<i>Underlying definitions and concepts</i>	<p>Crowding has two dimensions:</p> <ol style="list-style-type: none"> objective measurement (floor area or number of inhabitable rooms available per person); subjective perception and awareness of sufficient or insufficient space for daily living. <p>The objective assessment of density does not necessarily reflect the subjective perception of crowding, which is influenced by variety of factors including culture. It is furthermore necessary to distinguish between voluntary and forced coexistence.</p>	
<i>Computation</i>	<p>The indicator can be computed as:</p> <p>1) RA (Room availability) = $(H1 / H2) * 100$</p> <ul style="list-style-type: none"> H1 = number of households that live in dwellings where – according to the national legislation / definition – the number of habitable rooms per person is below one H2 = total number of households <p>2) SA (Space availability) = $(H3 / H2) * 100$</p> <ul style="list-style-type: none"> H3 = number of households that live in dwellings where – according to the national legislation / definition – the dwelling floor area per person is below 14 m² H2 = total number of households 	

Hous_Ex2	Accessibility	DPSEEA
<i>Issue</i>	Housing and Settlements – Use and Economy	
<i>Definition of indicator</i>	<p>Accessibility –</p> <p>Physical environmental design details defined as physical environmental barriers in relation to persons with functional limitations. This indicator can be measured from the accessibility perspective, i.e. based on objective, professional assessments, or from the usability perspective, i.e. based on subjective user perceptions.</p> <p>The indicator is delimited to the dwelling unit and the immediate housing environment. The immediate housing environment consists of the collectively shared spaces of / around the residential building (such as stairwell, cellar rooms, parking lot, entrance area, outdoor spaces), plus the private outside spaces such as gardens and balconies.</p>	
<i>Computation</i>	<p>The indicator contains a technical and a policy dimension.</p> <p>Technical dimension:</p> <p>1) $\text{Accessibility} = 100 * \text{DEB} / \text{DT}$ with DEB being the number of dwellings units with one or more of the three environmental barriers specified; and DT the total number of dwellings.</p> <p>2) $\text{Functional limitations} = 100 * \text{FLP} / \text{TP}$ with FLP being the number of persons with one or more of the three functional limitations specified; and TP the total population.</p> <p>OR</p> <p>$\text{Ageing} = 100 * \text{OP} / \text{TP}$ with OP being the number of persons with an age of 75 and higher, and TP the total population.</p> <p>Policy dimension:</p> <p>3) Policy = Existence of any regulation or mechanism through which the specific needs of persons with functional limitations are supported and met (e.g. through public grants for housing adaptation / home modification)</p> <p>4) $\text{Housing adaptation / home modification} = 100 * \text{AD} / \text{DT}$ compared to $100 * \text{FLH} / \text{TH}$ with AD being the number of adapted / modified dwellings and DT being the total number of dwellings; and FLH being the number of households with at least one member with a functional limitation and TH being the total number of households.</p> <p>5) $\text{Adaptation investment} = 100 * \text{AI} / \text{GDP}$ with AI being the total amount of public grants and resources invested in housing adaptation / home modification, and GDP being the Gross Domestic Product</p>	

Hous_Ex3	Extremes of Indoor Air Temperature	DPSEEA
<i>Issue</i>	Housing and Settlements – Indoor comfort	
<i>Definition of indicator</i>	<p>Extremes of Indoor Air Temperature -</p> <p>Temperature-related health effects: the sum of excess deaths and excess hospital admissions during periods of exposure to (a) extreme high or (b) extreme low temperatures compared to normal (non-extreme) periods.</p> <p>Outdoor air temperatures are used as a proxy on the assumption that dwelling design and construction should be capable of protection from extreme conditions.</p>	
<i>Underlying definitions and concepts</i>	<p>The indicator relies on measurements of extreme high or low temperatures occurring for prolonged periods of the winter (low temperature), or the summer (high temperature) seasons.</p> <p>It assumes a direct causal link between the physical standard and condition of the housing stock, and the inhabitants' exposure to extreme indoor temperatures caused by extreme climatic conditions.</p> <p>It further assumes a direct causal link between housing conditions and excess deaths and hospital admissions during periods of excess climatic conditions.</p>	

	<p>The possibility of extreme indoor temperatures during periods of extreme climatic conditions may be caused by one or more of the following:</p> <ul style="list-style-type: none"> ➤ Unsatisfactory housing conditions, e.g. low thermal insulation characteristics, lack or inadequate provision of ventilation possibilities or air conditioning, and/or lack or inadequate means for heating. ➤ Lack of household economic resources to compensate for extreme climatic conditions (high and low). ➤ Lack or breakdown of external provision of fuel or power to the dwelling, e.g. external failure in supply of central heating, or external failure in supply of electricity. ➤ Individual failure to utilise available means to compensate for extreme indoor temperatures, e.g. lack of knowledge, realisation, or willingness. <p>Generally, short-term exposure to high/low indoor temperatures will not be prejudicial to health, even for vulnerable groups. Therefore only exposure events as long as, or longer than set by the indicator should be recorded.</p>
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Hous_ Ex4	Dampness and Mould Growth (Moisture damage)	DPSEEA
<i>Issue</i>	Housing and Settlements – Indoor comfort	
<i>Definition of indicator</i>	Dampness and Mould Growth (Moisture damage) – Percentage of the population living in housing suffering from serious dampness. Exposure to high levels of relative humidity, mould spores and house dust mites are known threats to health.	
<i>Underlying definitions and concepts</i>	<p>Some dampness will not necessarily be a threat to health. It may be small scale, intermittent in nature, or located in a part of the dwelling that will not unduly affect the occupants (ie not a living room or occupied bedroom).</p> <p>The cause of the dampness within the housing context could be:</p> <ul style="list-style-type: none"> • Moisture penetration due to inadequate design, construction and or maintenance of the housing, or • Moisture rising through floors and/or walls because of a lack of or defects to damp proof courses or membranes, or • Condensation due to poor housing design, construction, insulation or ventilation, or. • Condensation due to overcrowding or heavy household use of the dwelling – such as washing/airing clothes without opening windows. 	

Hous_ Ex5	Household hygiene	DPSEEA
<i>Issue</i>	Housing and Settlements - Indoor comfort	
<i>Definition of indicator</i>	Household hygiene – Percentage of the population living in housing with missing or substandard hygienic amenities.	
<i>Underlying definitions and concepts</i>	<p>The indicator requires the identification of the number of households / persons living in housing which lacks one or more of the hygienic amenities.</p> <p>The hygiene amenities include, within the dwelling and for the exclusive use of the household –</p> <ul style="list-style-type: none"> (a) a supply of water to the kitchen, and to the appropriate amenities, and (b) a toilet, shower or bath, cooking facilities, and a fridge (or facilities for food storage). <p>Reasons for substandard housing hygiene amenities can e.g. be</p> <ul style="list-style-type: none"> • adequate hygienic conditions exist but have to be shared with other households • poorly constructed, or inadequately maintained services (e.g. supplies of water, 	

	<p>electricity or gas) which do not work properly or even may be dangerous to occupants</p> <ul style="list-style-type: none"> • low technical or constructional quality or obsolete products which do not provide reliable or hygienic service or work inefficiently • intermittent water supply conditions, or water supply from unsafe sources
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Hous_ Ex6	Indoor radon in dwellings	DPSEEA
<i>Issue</i>	Housing and Settlements - Indoor comfort	
<i>Definition of indicator</i>	<p>Indoor radon in dwellings –</p> <p>Potential exposure to radon levels in indoor dwellings implies the following:</p> <ol style="list-style-type: none"> 1) existence of a monitoring program 2) a defined action radon level 3) information at a given area unit (e.g. national or regional) on : <ul style="list-style-type: none"> - distribution of the dwellings according to radon levels - proportion of effectively detected dwellings with radon levels above action level - proportion of effectively remedied dwellings among the effectively detected 	
<i>Underlying definitions and concepts</i>	<p>The indicator is based on the following definitions :</p> <p>Radon level: the annual average of radon activity concentration in a dwelling (in an inhabited room of a house)</p> <p>National or regional radon level: mean of measured radon level in a representative sample (arithmetic, geometric mean, median)</p> <p>Dwelling: the inhabited part of the house</p> <p>Remedy: action done to reduce radon levels</p> <p>National action level: regulation or guideline level of radon joint with a reduction programme</p> <p>Monitoring program: officially carried program of measurement to assess indoor radon levels</p>	

Hous_ Ex7	Crime and perception of crime	DPSEEA
<i>Issue</i>	Housing and Settlements - Safety	
<i>Definition of indicator</i>	<p>Crime and the perception of crime –</p> <p>Incidences and perception of theft, robbery and vandalism in dwellings and public spaces.</p>	
<i>Underlying definitions and concepts</i>	<p>This indicator is based on:</p> <ul style="list-style-type: none"> ▪ actual and reported crime by type; ▪ crime perception and fear of crime; ▪ how people act to face crime and its perception. <p>Measurements incorporate both the dwelling and its residential environment.</p>	

Hous_ E1	Housing Safety and Accidents	DPSEEA
<i>Issue</i>	Housing and Settlements - Safety	
<i>Definition of indicator</i>	<p>Housing Safety and Accidents –</p> <p>Accidental (unintentional) injuries and fatalities from external causes (including poisonings) in and around the dwelling, measured by the number of fatalities and injuries requiring medical attention related to dwellings; and if possible, related to dwelling characteristics.</p>	
<i>Underlying definitions and concepts</i>	<p>Includes –</p> <p>Fatalities and physical injuries resulting from falls, being struck by objects, cuts and lacerations from the structure or equipment.</p> <p>Fatalities and burn injuries caused by unintentional dwelling fires.</p> <p>Poisonings includes those resulting from unintentional or mistaken (or inquisitive in the case of small children) ingestion of medicines, cleaning products, pesticides etc.</p>	

	<p>Toxic effects of gases, whether poisoning or asphyxiation (eg, from carbon monoxide). The dwelling should include the private internal and external space and any commonly shared internal and external space, associated with the dwelling.</p> <p>Data on dwelling characteristics (eg, age, type) may provide a proxy for features likely to increase or reduce the risk of accidents.</p> <p>Accident and poisoning data should be comparable to the following ICD-10 codes (or equivalent ICD-9) –</p> <p>Physical Injuries and poisonings: ICD-10 codes S00 to T32; T36 to T60; T64 to T65; T71; and T75.1</p> <p>Burn Injuries: ICD-10 codes T20 – T31 (excluding corrosion injuries)</p> <p>Fatalities: death as a direct result of an accidental injury or poisoning</p> <p>External Causes: ICD-10 codes W00 to X19; and X40 to X49</p> <p>Dwelling: (ICD-10 fourth code .0)</p>
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Traffic Accidents

Traf_ D1	Distance Travelled	DPSEEA
<i>Issue</i>	Transport, housing and human settlements	
<i>Definition of indicators</i>	Number of passenger Km travelled per year stratified for mode of road users (car, lorries, pedestrian, motorcycle)	
<i>Underlying definitions and concepts</i>	Number of passenger-Kilometres: total amount of passenger-Kilometres travelled by mode of road user over a time period Passenger-Kilometres: a unit of measure representing the transport of one passenger over a distance of 1 Km	

Traf_ S1	Renewal rate of passenger cars	DPSEEA
<i>Issue</i>	Transport, housing and human settlements	
<i>Definition of indicator</i>	The average renewal of passenger cars	
<i>Underlying definitions and concepts</i>	Vehicle fleet: number of circulating vehicles as resulted from public motor vehicle registries.	

Traf_ S2	Road accident rate	DPSEEA
<i>Issue</i>	Transport, housing and human settlements	
<i>Definition of indicators</i>	Number of road accident per vehicle fleet (vehicle type) or general population	
<i>Underlying definitions and concepts</i>	Road accident: any collision that involves at least one vehicle in motion on a road normally open to traffic, including those where a vehicle in collision with a pedestrian is involved and results in at least one injured person. Vehicle fleet: number of circulating vehicles as resulted from public motor vehicle registries Total resident population stratified by gender and age.	

Traf_ S3	Percentage of vehicles exceeding speed limits	DPSEEA
<i>Issue</i>	Transport, housing and human settlements	
<i>Definition of indicators</i>	Percentage of vehicles exceeding speed limits	
<i>Underlying definitions and concepts</i>	Speed limit: top speed permitted according to the road (motorways, urban areas, other road) and vehicle type (car, motorcycle, bus, lorry) Circulating vehicles: number of circulating vehicles at the site of measurement	

Traf_ Ex1	Person time spent on the road	DPSEEA
<i>Issue</i>	Transport, housing and human settlements	
<i>Definition of indicators</i>	Person hour spent on the road to get to the place of work or the school by main mode of travel	
<i>Underlying definitions and concepts</i>	Number of hour spent on the road: total amount of time spent on the road to get to the usual place of work or the school from home	

Traf_ Ex2	Percentage of safety vehicle devices use	DPSEEA
<i>Issue</i>	Transport, housing and human settlements	
<i>Definition of indicators</i>	Percentage of safety vehicle device use in the circulating population	
<i>Underlying definitions and concepts</i>	Safety vehicle device: the term includes the main device designed to protect car (seat belt, child restrain) and motorcycle occupants (helmet) Circulating population: number of car and/or motorcycle occupants as resulted from surveys	

Traf_ E1	Mortality from Traffic Accident	DPSEEA
<i>Issue</i>	Transport, housing and human settlements	
<i>Definition of indicator</i>	Mortality rate due to transport accidents, by age, gender	
<i>Underlying definitions and concepts</i>	This indicator is based on the following definitions Deaths due to road traffic accidents: All deaths directly or indirectly attributable to involvement in a traffic accident however caused. It also includes immediate and delayed deaths(within 30 days). Total resident population stratified by gender and age.	

Traf_ E2	Potential Years of life lost	DPSEEA
<i>Issue</i>	Transport, housing and human settlements	
<i>Definition of indicators</i>	Potential years of life lost (PYLL) attributable to transport accidents	
<i>Underlying definitions and concepts</i>	Potential Years of l life lost for premature deaths directly or indirectly attributable to involvement in a traffic accident and Potential years of life lost for all causes including traffic accident	

Traf_ E3	Injury from Traffic Accident	DPSEEA
<i>Issue</i>	Transport, housing and human settlements	
<i>Definition of indicators</i>	Injury rate due to transport accidents	
<i>Underlying definitions and concepts</i>	This indicator is based on the following definitions Injury due to road traffic accidents: All injuries directly or indirectly attributable to involvement in a traffic accident however caused. This includes minor accident (as sprains and bruises) and serious accident. Injury could be defined as: disruption of the structure or function of the human organism resulting from exposure to excessive or deficient energy. Typically, both the exposure to energy and the onset of disruption are acute, often the energy is kinetic, but it may be another type (thermal, chemical etc.). Severity of injury can be defined in terms of threat to life, immediate effects (e.g. loss of consciousness, compound fracture, multiple injuries); time to recover, the outcome of patient (e.g. death, permanent disability or disfigurement); quality of life; resources required for treatment (e.g. surgery, invasive diagnostic tests); cost (medical or other costs) Total resident population stratified by gender and age.	

Traf_ E4	DALYs lost to road accidents	DPSEEA
<i>Issue</i>	Transport, housing and human settlements	
<i>Definition of indicators</i>	-Number of DALYs lost as a consequence of traffic accident for total resident population standardized per age and sex -Percentage of DALYs lost as a consequence of traffic accident compared to the total number of DALYs lost for all causes	
<i>Underlying</i>	D.A.L.Y. is an indicator of time lived with a disability and the time lost due to premature	

<i>definitions and concepts</i>	<p>mortality.</p> <p>The values incorporated in the DALY indicator are:</p> <p>Duration of time lost due to a death at each age: this measure requires the definition of the potential limit of life. For a specific limit, the expectations are based on life table</p> <p>Disability weights or degrees of suffering associated with different non-fatal conditions.</p> <p>Age Weights which indicate the relative importance of healthy life at different ages</p> <p>Time preferences which is the value of health gains today, compared to the value attached to health gains in the future</p>
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Traf_E5	Deaths due to drinking driving	DPSEEA
<i>Issue</i>	Transport, housing and human settlements	
<i>Definition of indicators</i>	Number of deaths due to drunk driving/population	
<i>Underlying definitions and concepts</i>	<p>Alcohol use: data element which describes the suspicion or evidence of alcohol use preceding the event by persons involved in the event.</p> <p>Road accident: any collision that involves at least one vehicle in motion on a road normally open to traffic including those in which a vehicle in collision with a pedestrian is involved and causing at least an injury</p> <p>Total resident population stratified by gender and age. Deaths of tourists could be found in the numerator of the mortality rate, while in the denominator only resident population is counted</p>	

Water and Sanitation

WatSan_P1	Waste water treatment (urban)	DPSEEA
<i>Issue</i>	Water and Sanitation	
<i>Definition of indicator</i>	Percentage of the population served by sewerage connected to a modern waste water treatment facility producing a regulated effluent discharge monitored by the competent authorities.	
<i>Underlying definitions and concepts</i>	<p>Waste water: fluid waste originating from household activities associated with daily human life, e.g. use of toilets, bathing, washing, cleaning, nutrition, food preparation, laundering, personal hygiene.</p> <p>Waste water treatment: any process that produces an effluent quality in compliance with the conditions set by the competent authorities responsible to implement EU and/or associated national legislation.</p>	

WatSan_S1	Recreational water compliance	DPSEEA
<i>Issue</i>	Safe recreation water environment: does NOT include enclosed water i.e. swimming pools	
<i>Definition of indicator</i>	Proportion of identified bathing waters in compliance during the specified bathing season with the EC mandatory standards for the coliform parameters	
<i>Underlying definitions and concepts</i>	<p>The proportion of the bathing water sites exceeding the current imperative values for the coliform parameters specified by the European Commission under the Bathing Water Directive (76/160/EEC) over the bathing season.</p> <p>Total coliforms: Imperative 95% < 10,000 per 100 ml</p> <p>Faecal coliforms or <i>E. coli</i> Imperative 95% < 2000 per 100 ml</p> <p>Note: these standards are in transition and are likely to change before 2010</p>	

WatSan_S2	Drinking water compliance	DPSEEA
<i>Issue</i>	Water and Sanitation	
<i>Definition of indicator</i>	<p>The indicator refers to regulated public water supplies</p> <p>Proportion of the drinking water samples analysed which fail to comply with the EU Directive on the quality of water intended for human consumption.</p>	
<i>Underlying definitions and concepts</i>	<p>Number of regulatory drinking water analyses not in compliance with the suite of parameters specified in the EU Directive on the quality of water intended for human consumption..</p> <p>Total number of regulatory analyses made by an official monitoring agency or undertaker within the defined spatial unit over a given time period (one year).</p> <p>This applies to regulated piped water supplies, provided by a licensed water undertaker.</p>	

WatSan_Ex1	Safe drinking waters	DPSEEA
<i>Issue</i>	Water and Sanitation	
<i>Definition of indicator</i>	Proportion of the population with continuous access to adequate amount of safe drinking water in the home.	
<i>Underlying definitions and concepts</i>	Safe drinking water: is a piped water supply, providing a sufficiency of water available 24 hours per day piped into the cartilage of the property provided by a licensed and regulated water undertaker.	

WatSan_E1	Outbreaks of water-borne diseases	DPSEEA
<i>Issue</i>	Water and Sanitation	
<i>Definition of indicator</i>	Number of outbreaks of water-related illness reported separately for drinking water and recreational waters	
<i>Underlying definitions and concepts</i>	<p>Outbreak: an occurrence of two or more linked cases of the same illness, or an increase in the number of observed cases over the respected number. Outbreaks usually occur in a very short time e.g. less than one month</p> <p>Waterborne diseases: diarrhoeal and other infectious diseases</p>	

WatSan_A1	Management of bathing waters	DPSEEA
<i>Issue</i>	Water and Sanitation	
<i>Definition of indicator</i>	Percentage of identified bathing waters which are covered by management systems as described by WHO (2003).	
<i>Underlying definitions and concepts</i>	The management system (WHO, 2003) will facilitate (i) the real time prediction of bathing water quality to underpin (ii) provision of informed choice to the bathing public through the provision of beach signage and/or equivalent communication methods	

WatSan_A2	Water safety plans	DPSEEA
<i>Issue</i>	Water and Sanitation	
<i>Definition of indicator</i>	Proportion of the population served by a potable water supply covered by a 'water safety plan' as described by WHO (2002).	
<i>Underlying definitions and concepts</i>	<p>Water safety plan precludes: (i) risk assessment to define potential health outcomes of water supply, (ii) system assessment to determine the ability of the water supply system to remove pathogens and achieve defined water quality targets, (iii) process control using HACCP, and (iv) process/system documentation for both steady state and incident-based (e.g., failure or fault event) management.</p> <p>An appropriate water safety plan will: (i) contain a HACCP assessment of the full supply system from raw water gathering grounds to the consumers' tap and (ii) maintain a quality assurance system to monitor and maintain the management performance of the system.</p>	

Chemical Emergencies

Chem_P1	Industrial facilities under SEVESO II directive	DPSEEA
<i>Issue</i>	Chemical Emergencies	
<i>Definition of indicator</i>	Number of sites containing large quantities of chemicals according to the criteria of the EU 'Seveso II' directive	
<i>Underlying definitions and concepts</i>	<p>The indicator is based on the ability to identify fixed facilities qualifying as upper and lower tier establishments according to the EU Council directive 96/82/EC(09 Dec 1996), i.e. the 'Seveso II' directive. Underlying definitions are:</p> <p>Establishment: the whole area under the control of the operator where dangerous substances are present in one or more installations, including common or related infrastructures or activities.</p> <p>Dangerous substance: a substance, mixture or preparation listed in the Seveso II directive's annex I, part 1, or fulfilling the criteria in annex 1, part 2.</p>	

Chem_A1	Regulatory requirements for land-use planning	DPSEEA
<i>Issue</i>	Chemical Emergencies	
<i>Definition of indicator</i>	Regulatory requirement for land-use planning around sites containing large quantities of chemicals according to the criteria for upper tier of the EU 'Seveso II' directive	
<i>Underlying definitions and concepts</i>	<p>Underlying definitions are:</p> <p>Establishment: the whole area under the control of the operator where dangerous substances are present in one or more installations, including common or related infrastructures or activities.</p> <p>Dangerous substance: a substance, mixture or preparation listed in the Seveso II directive's annex I, part 1, or fulfilling the criteria in annex 1, part 2.</p> <p>Regulatory requirement on the land-use planning: clearly outlined restrictions on land use in the safety zone(s). The safety zones around an establishment are determined based on the identification and definition of accident scenarios involving the dangerous substances and determination of the likelihood of (health) consequences of these scenarios.</p>	

Chem_A2	Chemical incidents register	DPSEEA
<i>Issue</i>	Chemical Emergencies	
<i>Definition of indicator</i>	Presence of an active, cumulative register of chemical incidents with national coverage	
<i>Underlying definitions and concepts</i>	<p>Underlying definitions are:</p> <p>Register - active database, with the population and geographical areas defined. The register should define the incident at least in terms of:</p> <ul style="list-style-type: none"> • Identification of the source: chemical(s) released (name and CAS number), estimated quantities and the medium to which the chemical(s) have been released. • Information about the location of the incident: unique identifier of geographical location (grid co-ordinates, latitude and longitude, or similar), fixed site or transportation. • Outcome: estimate of the number of people actually exposed (population, workers and responders). • A contact source of further information on the incident <p>Incident - an agreed exposure-category of incident. Typically this can be taken as the IPCS Level 3 - where there is suspected or actual ill-health; and IPCS Level 4 - where a major emergency plan is activated.</p>	

Chem_A3	Government preparedness	DPSEEA
<i>Issue</i>	Chemical Emergencies	
<i>Definition of indicator</i>	Government preparedness for chemical incidents	
<i>Underlying definitions and concepts</i>	<p>This indicator relates to the central government's ability to respond adequately to a chemical incident. The following are crucial elements that a government should have in place to enable its (co-ordinating role in the) response function:</p> <ul style="list-style-type: none"> • National Advisory Body: an institution/body (ideally centrally funded) staffed by professionals with a background in legislation, chemical incident management and data collation; and with access to specialist professionals. Its function is to advise Government on preparedness, and during significant chemical incidents; it can also coordinate all the regional and local functions. • Environmental/Public Health Plans for dealing with chemical incidents: an active, written, document detailing the actions required of public health and environmental health professionals before, during and after a chemical incident. • Emergency Response Guidelines: A widely accepted set of emergency response guidelines is an essential element of a country's ability to perform a rapid health risk assessment for a chemical incident. <i>Emergency response guideline:</i> a concentration of a substance in air or drinking water indicating a threshold for a well-defined level of toxic health effect in the general population from an emergency exposure with a specified exposure period. • Public alerting system: The presence of a system with very wide coverage to alert the public that an incident has occurred. 	

Radiation

Rad_E1	Incidence of skin cancer	DPSEEA
<i>Issue</i>	Radiation	
<i>Definition of indicator</i>	Annual incidence rate of skin cancer	
<i>Underlying definitions and concepts</i>	<p>The indicator is based on the following definitions:</p> <p>Skin cancer: a malignant neoplasm ICD 10 code C43 – C44</p> <p>Total population: total resident population</p>	

Rad_A1	Effective environmental monitoring of radiation activity	DPSEEA
<i>Issue</i>	Radiation	
<i>Definition of indicator</i>	Existence of effective environmental monitoring of radiation activity in compliance with national and international quality assurance programs	
<i>Underlying definitions and concepts</i>	<p>QA programmes on environmental monitoring will among others set criteria with respect to set-up of the system, monitoring frequency, density and sensitivity. As an example – or, if desired, as a reference system – the criteria of the EC draft recommendation on monitoring of the levels of radioactivity in the environment are given.</p> <p>Density: The EC recommends a sparse and a dense network with different sampling frequency for each media, among others ‘representative for various geographical regions and taking population distribution into account’</p> <p>Frequency: dense network: ≤quarterly; sparse: ≤monthly; ambient dose: continuously.</p> <p>Sensitivity: detection limit < reporting level</p>	