

## LIFE ■ Environment



## EMAS and Information Technology in Hospitals



LIFE04 ENV/GR/114

## eHospitalEMAS News



The core of "eHospitalEMAS" programme is the registration of the Environmental Management Systems of the Hospitals to EMAS, as well as the implementation of sustainable waste management and energy saving measures, including "green purchasing" of products.

The actions undertaken by the hospitals in the framework of the implementation of the above mentioned issues are the following:

## Eco-Management and Audit Scheme (EMAS)

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- Training seminars for each hospital's personnel have been completed. The actions already implemented regarding the implementation of an Environmental Management System (EMS) in the participating hospitals, as well as future actions foreseen were presented to the personnel of the two hospitals. A leaflet was also distributed, containing information on the main activities of the eHospitalEMAS project, on the relationship between health and environment, as well as some advice on how can the staff of the hospitals contribute to the protection of the environmental.

- A software was developed to facilitate the implementation of an Environmental Management System in the two hospitals, which was presented to its future users.

## Sustainable Waste Management

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- The reports on current waste management practices in the two hospitals are completed and currently, an action plan on promoting sustainable waste management is developed. The plan includes mainly actions on recycling materials such as paper, batteries etc. A Guide for Implementing Sustainable Waste Management is developed, with guidelines on collection, separation, storage and disposal of waste.

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## eHospitalEMAS News



eHOSPITALEMAS

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### Energy Saving and "Green Purchasing"

A report on best practices on energy efficient measures in European hospitals has been developed, as well as a list of energy efficiency measures that may be implemented in hospitals. Energy audits are currently organized in the two hospitals in order for the suitable energy efficiency measures to be selected according to each hospital's needs.

Regarding the implementation of "green purchasing" policies, a report was completed, describing innovative methodologies for "green purchasing" in hospitals. At the moment, the categories of products that will be selected are under consideration and based on this decision a "green purchasing" guide will be produced, which will include environmental friendly product specifications, as well as guidelines for hospitals willing to implement a "green purchasing" policy.

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### Programme Website

The website is available at [www.ecohospitals.gr](http://www.ecohospitals.gr), where information can be found on the Environmental Management System and the Eco-Management and Audit Scheme (EMAS). A number of reports, a short version of the EMAS Software developed within the framework of the eHospitalsEMAS programme, as well as our newsletters will be available on the website. Currently, the first two newsletters (September 2005 and February 2006) are on-line. The following reports are also available in Greek in the section downloads:

- State-of-the-art policies for "Green Purchasing" in Hospitals
- List of measures for energy efficiency in Hospitals
- Analysis on best practices of energy efficiency in Hospitals

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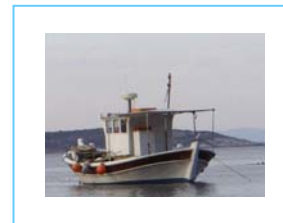
### Workshops on Environmental Management

Two workshops on Environmental Management will be organized. The participants expected are the personnel employed in public and private hospitals involved in environmental management, freelancers, as well as employees of other organizations and interested parties.

## Environment and Occupational Health

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It is a fact that all of us spend more than 1/3 of our time at the workplace. Thus the conditions of the indoor environment are crucial to human health.








Most environmental issues that affect human health at the workplace are:

- Indoor air quality: dust, insufficient ventilation, atmospheric pollution, radon (nuclear gas stemming from the ground and concentrates in the basement of buildings) are factors of air quality degradation in internal spaces. All the above worsen the health problems of the respiratory system, asthma, etc.
- Noise: commotion, noisiness, shouting etc affect severely human hearing resulting in its long term loss.
- Lighting: lack of sufficient light (under 400 lux in office spaces) lack of sun light, variation of lighting throughout the day, reflection of light on PC screens etc are factors that negatively affect human sight and cause immediate effects (dizziness, etc) as well as long term effects (short-sightedness, etc)
- Visual / aesthetic: good housekeeping, presence of plants, variety of colors (see table below), decoration etc affect the psychology of the employees. Already occupational stress rises to be a significant problem and one of the most important occupational diseases.

In conclusion the quality of the environment as well as of human health does not only depend on environmental pollution but on the degradation of indoor areas in which we live and work. The "ill" buildings are responsible for many occupational diseases as well as for possible cause of accidents with detrimental impacts to human health.

It is of utmost importance to ensure a good working environment aiming at good personal health.

**Table: Psychological impact of colors**

Color	Feeling of distance	Color Tone				Psychological Impact
		Cold	Neutral	Warm	Very Warm	
	Long	+				Relaxing
	Long		+			Very relaxing
	Short			+		Very irritating Not relaxing
	Very short				+	Stimulant
	Short				+	Stimulant
	Very short (claustrophobic)		+			Stimulant
	Very short	+				Aggressive Wearing

## eHospitalEMAS software



The eHospitalEMAS software has been designed and developed in order to be used as a dynamic tool supporting the Environmental Management System (EMAS) application and optimization procedures of the Hospitals for better environmental performance. Additionally, EMAS software supports the Plan-Do-Check-Act cycle (the four basic elements of EMAS philosophy).

### The benefits from the application of EMAS software :

- Direct access to all information regarding EMAS through an easy and friendly search.
- Automation of the flow control of the multi-user editing, checking and approval procedures of structured data, such as programs and information lists.
- Systematic and secure EMAS file sorting and archiving, controlled and secure access to archived EMAS data.
- Full control of the Environmental Management System operation, providing direct information about pending issues regarding EMS planning, implementation, monitoring and objectives performance achievement.
- Providing dynamic reports crucial documentation based on the current system situation.
- Optimization of communication among all involved parties participating directly or indirectly in EMAS operation within hospitals.
- Optimization of productive time, improvement of the quality of operational procedures, data correlation ability, improvement of administrative and management information, reduction of operational and administrative costs

### Software characteristics

- Multi-user web interface for direct and easy access to the application through standard web browsers (such as MS Internet Explorer, Mozilla Firefox).
- Secure access using different usernames and passwords for each user.
- Use of multiple "roles" for controlled access to data and software operations.
- Open architecture and use of Open Source platforms (Java, RDBMS, Web Server, etc.) for greater flexibility regarding installation, operation and expansion cost structure.
- Supporting multiform data files for EMAS documents (PDF, MS Word, RTF, XLS, XML, TXT).

### Operations - procedures to support

The EMAS software supports the management of following business issues resulting from EMAS planning, operation and control procedures:

- Record of the involved personnel and their responsibilities in EMS.
- Record of legislative requirements and required licenses.
- Planning and implementation of environmental education programs.
- Documents management and control
- Identification, assessment and classification of environmental aspects and impacts.
- Management of environmental objectives and targets.
- Preparation and implementation of Environmental Programs
- Preparation and implementation of maintenance / calibration programs.
- Keeping of equipment/devices list and their control/ maintenance logbook as well.
- Planning and implementation of Audit programs.
- Keeping of Audits book including related corrective actions.
- Control panel for EMS performance indicators and various pending issues
- Dynamic reports.



## "Green Purchasing" in Hospitals

EPTA Ltd.

The term "Green Purchasing" stands for the purchases of products or services with certain attributes that make them **friendlier to the environment** than standard products. Green Purchasing is a high priority for the European Commission mostly due to the enormous volume of products consumed annually by both private and public purchasers.

"Green Purchasing" may cover a broad market and has already been applied in areas such as energy, consumables, electrical and electronic equipment, the food industry, cleaning products etc. Green purchasing criteria have also been broadly adopted in constructions as well as in transportations. Green purchasing can contribute to the decrease of the quantities of raw materials and energy consumed, the reduction of the pollution caused during the production and use of a product and the reduction of the quantities of waste for disposal.

From industries to consumers and municipalities to hospitals, all purchasers can contribute to the promotion of green procurement of products and services, using their considerable purchasing power, as well as motivate the market to produce green products and therefore contribute to sustainable development.

Hospitals in specific, due to the large facilities and the number of departments operating and services provided, purchase large quantities of products in annual basis. These products often have significant environmental impact and can also affect the health of both hospital workers and patients. The implementation of a green purchasing policy can improve planning and procurement of products and may prevent many of the above mentioned problems from coming up.

By reviewing green purchasing policies implemented by private and public institutions in Greece and other countries, a list of suggestions was created, within the framework of the eHospitalEMAS project, which may be implemented by other hospitals in order to improve their environmental performance and contribute to the protection of the environment.

A full text of the report is available in Greek at <http://www.ecohospitals.gr/downloads.php>

## Energy performance in hospitals

EPTA Ltd.

Energy saving has already been acknowledged as a fundamental measure for the protection of the environment at an international level. In addition, it may contribute to the reduction of the quantities of fossil fuels imported by a country, which leads to the reduction of the exchange spent to purchase the necessary quantities of energy resources.

The need for adopting energy saving policies and implementing energy saving measures in Greek buildings is obvious, as the electric and mechanic equipment of buildings, correspond to a percentage greater than 30% of the total final energy consumption. In addition, from the 1970s until today, the mean annual rate of energy consumption increases by a 4% and the contribution of the buildings sector to the energy consumption in the E.U, as well as to the CO<sub>2</sub> emissions, is more than 40%.

Since the '90s, Greece, through its participation in a number of European Commission treaties, has a commitment to promote relevant institutional, administrative and organizational measures, as well as environmental friendly technologies and measures on energy efficiency.

Energy saving interventions on buildings are an important step for improving the overall energy efficiency of the country and hospitals are a type of building with significant potential in energy saving. Typical characteristics of hospitals are the 24-hours operation, the large spaces, the high number of medical equipment and the need for thermal comfort of the patients. However, there is a high potential for energy saving and reduction in the electricity and fuel consumption through the implementation of the adequate measures.

Energy saving interventions on a building can be applied to:

- The shell of the building (insulation, adequate casings, passive solar systems)
- The surrounding space area (e.g use of plants for shading)
- The infrastructure for heating, cooling, lighting, hot water, electrical appliances
- The energy behavior of the users that affects the building's energy efficiency

An analysis of best practices used in other European hospitals has also been made in order to identify measures that could be adopted by hospitals in Greece and other Mediterranean countries with the aim of improving their energy and environmental performance.

A full text of the report is available in Greek at <http://www.ecohospitals.gr/downloads.php>



# eHOSPITAL EMAS



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