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## STUDY GROUP REPORT

### -- Toward Realization of Safe and Secure Ubiquitous Network Society -- The "Study Group on ICT for Realizing a Safe and Secure Society" Announces Its Report

The compilation of the final report took place at the 6th meeting of the Study Group on ICT for Realizing a Safe and Secure Society which took place on March 19.

The study group investigated future concepts and measures for their realization through the effective use of ICT of three topics which are of particular interest to people: (1) disaster

countermeasures and crisis management, (2) food security and safety, and (3) and daily life support for children and the elderly.

MIC will base itself on this report to take steps to promote the development and diffusion of ICT, and will target the realization of a safe society in which everyone can live securely.



TANIGUCHI Kazufumi, Parliamentary Secretary for Internal Affairs and Communications, receiving the report from Chairman SAITO Tadao

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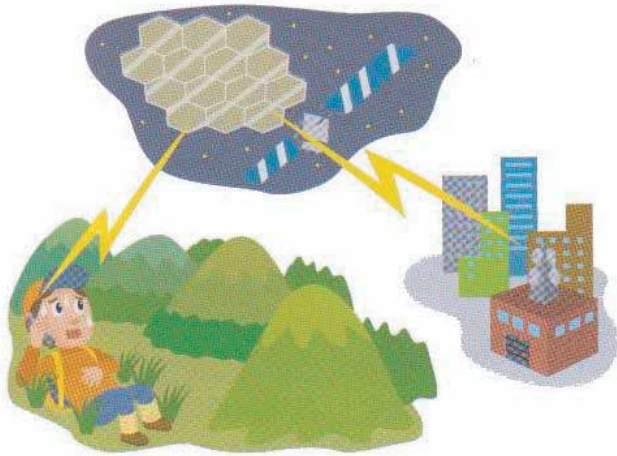
**Presentation materials of MIC are available at:**  
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The investigation was conducted with the cooperation of key figures and private sector companies, as well as the Cabinet Secretariat, the Cabinet Office, the National Police Agency, the Ministry of Education, Culture, Sports, Science and Technology, the Ministry of Health, Labor and Welfare, the Ministry of Agriculture, Forestry and Fisheries, the Ministry of Land, Infrastructure and Transport, the Japan Coastguard, the Ministry of Defense and others.

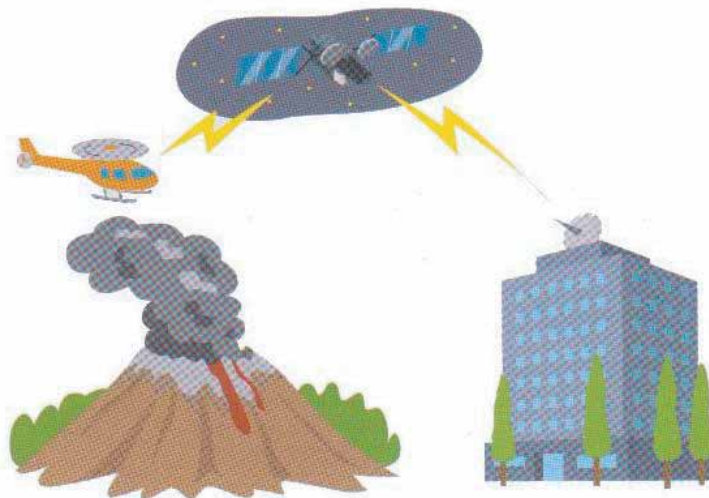
**1. Future concept of disaster countermeasures and crisis management**



Now that it is possible to communicate via satellite using ordinary mobile telephones, it has become possible to call for help wherever one happens to be at the time of a disaster.

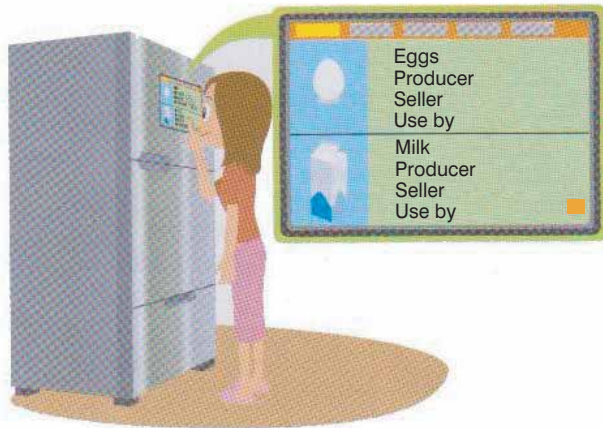


Now that it is possible to make highly accurate measurements of the flow of air above cities, this will be helpful in predicting tornadoes and large rainstorms.



It will become possible to use telecommunications satellites to send real-time videos and images from helicopters, airplanes and observation satellites.

## 2. Future concept of food safety and security



Seamless traceability of food production, processing, distribution, sales and consumption through the use of RFID tags or the like will prevent food-related incidents.

## 3. Future lifestyle concept for children and the elderly



Children's safety can be preserved and concerns about the health of elderly people be reduced by watching over them using RFID tag systems.

## TOPICS

# Results of a Study on the Effects of Electromagnetic Waves on Medical Equipment

*MIC has been implementing studies on the effects of electromagnetic waves on medical equipment since fiscal year 2000. In fiscal year 2006, the work was entrusted to an outside organization which studied the effects on implantable medical equipment, such as implantable heart pacemakers, of W-CDMA mobile telephone terminals in the 1.7 GHz band and UHF band RFID tag systems (handy type, fixed type and built-in type).*

*Since it was established as a result that there were cases where implantable heart pacemakers were affected by certain models of UHF band (950 MHz band) RFID tag system, there has been a partial amendment of the "Guidelines for preventing the effects of electromagnetic waves from various types of equipment on implantable medical equipment" (below referred to as "Guidelines").*

### Outline

MIC has been implementing annually since fiscal year 2000 a study on the effects of electromagnetic waves on medical equipment. In fiscal year 2006, a study was conducted on the effects on implantable heart pacemakers of mobile telephone (1.7 GHz band) and RFID tag systems (950 MHz band).

### Outline of Study Results

The study results showed that electromagnetic waves from fixed type RFIC tag systems (high output

passive tag systems in the 950 MHz band\*) produced an effect on implantable pacemakers from a maximum distance of 75cm.

In addition, with regard to W-CDMA type mobile telephone in the 1.7 GHz band, it was established that there was no particular problem within the limits of the current guidelines.

\* High output passive tag systems in the 950 MHz band

An RFID tag system that uses frequencies (950 MHz) in the UHF band which enable comparatively long

distance communications. For example, they could be used in applications such as for reading all of the attached tags in a container or on a pallet in one go.

### 1. Equipment Studied

#### [Wireless equipment]

1) W-CDMA format mobile telephone in the 1.7 GHz band: 1 model

2) UHF band (950 MHz band) RFID tag systems: 17 models

**[Implantable medical equipment]**

Representative models of implantable heart pacemakers and defibrillators currently in use

**2. Outline of Study Results**

(1) Effects of the electromagnetic waves from W-CDMA format mobile telephones in the 1.7 GHz band on implantable medical equipment

**[Implantable heart pacemakers]**

It was established that there could be an effect at a maximum distance of less than 1cm.

**[Implantable defibrillators]**

No effects were established.

NB: This study was conducted under severe conditions, with the output of the mobile telephones set at the highest levels, in order to establish the maximum effect on implantable medical equipment, and the study results (such as the maximum distance at which an effect was established) are not suitable for use in comparing

mobile telephone formats under normal usage conditions.

(2) Effects of the electromagnetic waves from RFID tag systems in the UHF band on implantable medical equipment

1) Effects of handy-type RFID tag systems on implantable medical x equipment  
No effects were established.

2) Effects of fixed type RFID tag systems on implantable medical equipment

**[Implantable pacemakers]**

Among the fixed type RFID tag systems, it was established that some of the models in the high output passive tag systems in the 950 MHz band could have an effect at maximum distances of 75cm.

**[Implantable defibrillators]**

It was established that there can be an effect at a maximum distance of 10cm.

3) Effects of built-in type RFID tag systems on implantable medical equipment  
No effects were established.

**Future Countermeasures**

Having received the study results, MIC is taking the countermeasures shown below.

**(1) The following to be added to the current guidelines and to be announced**

1) Regulations on approaching the periphery of the installation site:  
People wearing heart pacemakers should not get closer than 1 meter.

2) Attaching explanatory stickers to the RFID tag systems concerned.

**(2) Reminding radio station owners to take care**

Encouraging reminders to people who have already installed these RFID tag systems or who are planning to install them anew to take care.

**[Example of fixed type RFID tag system (high output passive tag system in the 950 MHz band)]**

**Amendment of Guidelines to prevent the effects of electromagnetic waves from various types of equipment on implantable medical equipment**

Based on the results of the study which was implemented in fiscal year 2006 concerning the effects of electromagnetic waves on implantable medical equipment, the "Guidelines for preventing the effects of electromagnetic waves from various types of equipment on implantable medical equipment" were amended as below.

**Outline of amendment of Guidelines**

The following guidelines were added in order to ensure that there will not be any effects from electromagnetic waves emitted by the high output passive tag system in the 950 MHz band of the fixed type RFID tag systems on implantable heart pacemakers.

**Fixed type RFID tag systems (high output passive tag systems in the 950 MHz band)**

(1) People fitted with implantable medical equipment should not get closer than a radius of 1 meter from any place equipped with a fixed type RFID tag system (high output passive tag system in the 950 MHz band) or showing an RFID sticker.

(2) People fitted with implantable medical equipment should immediately consult a physician if they feel any change in physical condition.

(3) Further safety investigations are being conducted by relevant organizations in order to minimize the effects of fixed type RFID tag systems (high output passive tag systems in the 950 MHz band) on implantable medical equipment.

**Explanation of Terminology**

RFID equipment: Radio Frequency

**Identification equipment**

Equipment which uses no-contact communications between a tag fitted with an IC and a reader/writer to read and write the data on the IC. It is used in a wide variety of fields, including distribution, inventory control, and settlement of products and the like.

The following types of equipment exist based on reader/writer shape:

Gate type: the reader/writer is in a gate configuration

Handy type: The reader/writer is a hand-held device that can be carried around

Fixed type: The reader/writer is used in a fixed position

Built-in type: Built-in to equipment such as printers



Gate type



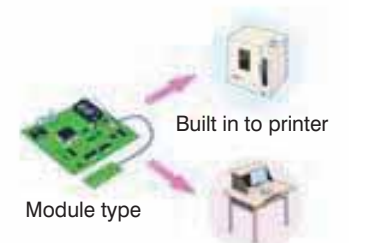
Handy type



Fixed type



Fixed type  
(High output passive tag system in the 950 MHz band)



Built-in type