



# IRPA

## Initiative on RP culture

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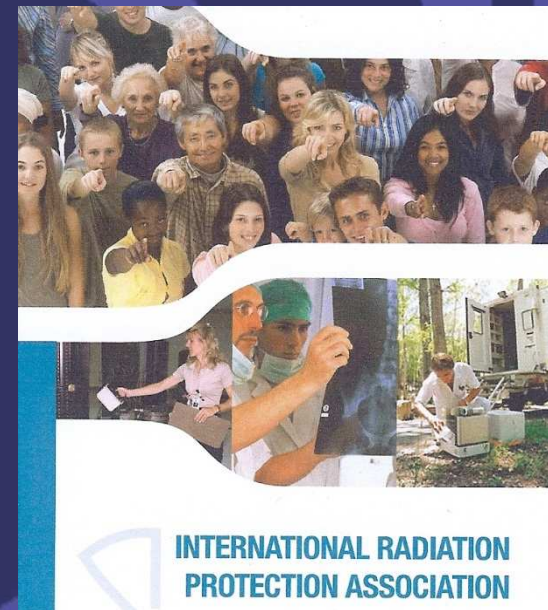


# IRPA

- 48 Associate Societies
- Representing 61 countries
- Almost 18,000 individual members

## ***Value and strength of IRPA:***

***Enormous resources of practical knowledge and experience in radiation protection and neighbouring specialist fields***





# Why IRPA ?

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- **Role of IRPA:**
  - **Be the voice of RP professionals**
  - **TO PROVIDE A MEDIUM FOR COMMUNICATION AND ADVANCEMENT OF RADIATION PROTECTION THROUGHOUT THE WORLD**
  - **TO ENCOURAGE INTERNATIONAL PUBLICATIONS DEDICATED TO RADIATION PROTECTION**



# RP in industry

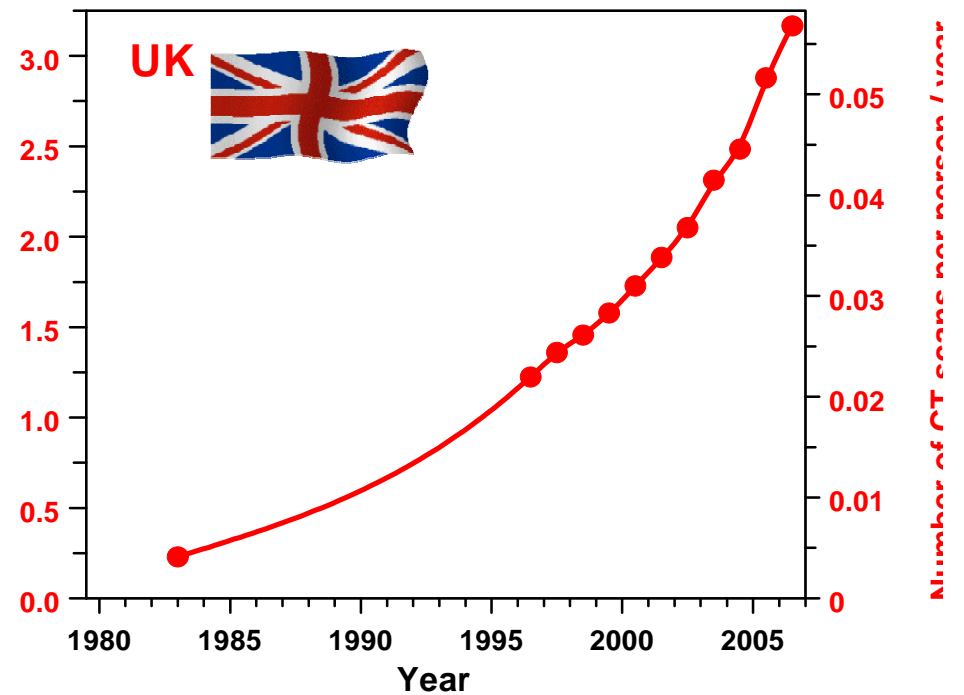
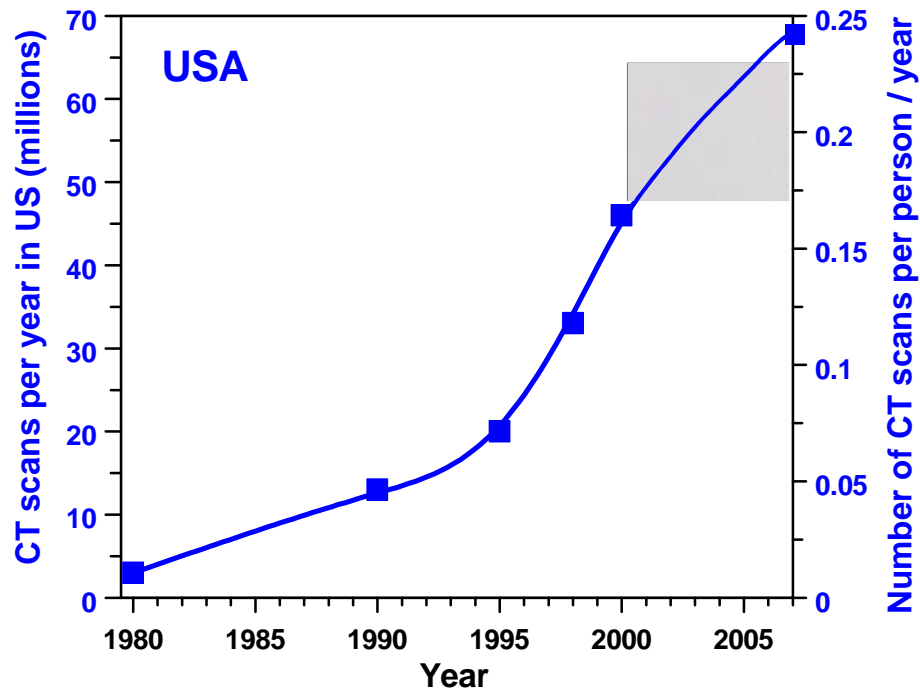
- The generation who developed RP applied today is gradually leaving now.
- **EDF NPP Internal workforce : 19000 employes, 40% are being replaced in less than 5 years**



- **As we change the core of the teams, we must remain vigilant in order to maintain a high degree of competence and to continue making progress in radiation protection and occupational safety**



# Fréquence des CT scan par an





# Scanners pédiatriques aux Etats-Unis

**1989:** ~1/2 million

**2007:** ~3 1/2 à 7 million

*(5 to 10% du nombre total de scan*

*(dont ~ à 1.5 millions pour des enfants < 5 ans ))*



IRPA GT CIPR 2013

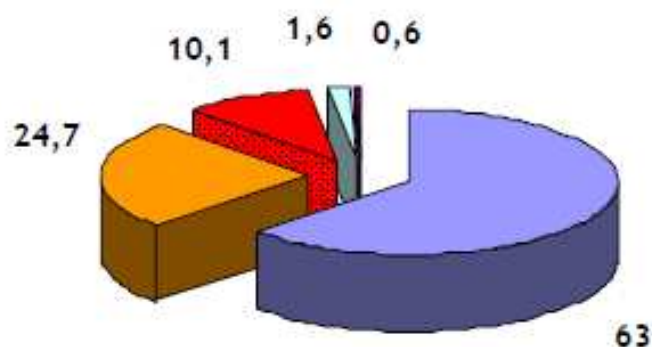
## Medical exposure of the French population in 2007

Cécile ETARD and Bernard AUBERT, IRSN Sandra SINNO-TELLIER, InVS

- **Average effective dose per inhabitant increased by 57% between 2002 and 2007 :**
  - 0.83 mSv per inhabitant in 2002 → 1.3 mSv per inhabitant in 2007
  
- **Contribution of CT to diagnostic collective effective dose increased by 14% between 2002 and 2007 :**
  - **More than 50% of the average effective dose per inhabitant is due to CT examinations**
  - More CT examinations performed,
  - More Thoracic, Abdominal and Pelvic CT, that contribute highly to the effective dose
  - More precise and accurate data available.
  
- **French diagnostic exposure is within the range of published European values.**

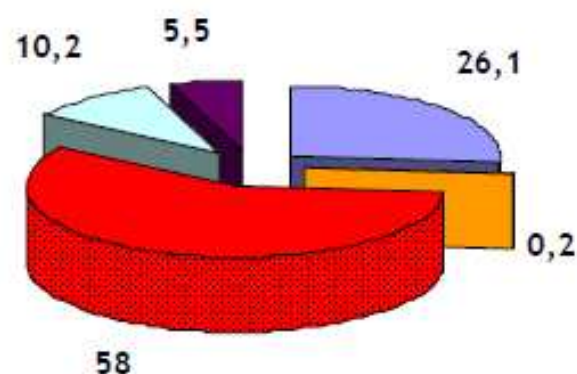
# Bilan pour l'année 2007

Nombre d'examens (%)



- Radiologie conventionnelle
- Radiologie dentaire
- Scanographie

Dose efficace moyenne par habitant (%)



- Médecine nucléaire
- Radiologie interventionnelle diagnostique

**74,6 millions d'examen ⇒ 1,3 mSv/an/habitant**

Plus de 50% de la dose efficace moyenne par habitant est due à la scanographie en 2007





# Safety Culture vs RP Culture

Safety culture is a concept that has been defined by different institutions, organizations, and there is a common understanding of its meaning

- **Safety culture includes nuclear safety, RP, occupational safety, security, health, environmental safety, ...**
- Hence, RP culture in our organizations should be seen as the implementation of RP principles inside the framework of safety culture
- RPC and SC should not be opposed. **RPC is part of SC with peculiarities: both are looking at human errors and the human side of safety.**
- Protection focuses on people and behavior (culture) to prevent harm to the worker and others when hazardous equipment is being operated



# The Initial Proposal

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- ❑ At the IRPA12 Congress in Buenos Aires in October 2008, the French Society for Radiation Protection (SFRP) proposed to launch an IRPA initiative for enhancing Radiation Protection (RP) culture among the RP professionals worldwide.
- ❑ **IRPA decided to launch an IRPA initiative for enhancing Radiation Protection (RP) culture among the RP professionals worldwide.**
- ❑ Subsequently,
  - ❑ the World Health Organisation (WHO),
  - ❑ the European ALARA Network (EAN),
  - ❑ the Health Physics Society (HPS),
  - ❑ the American Association of Physicists in Medicine (AAPM)
  - ❑ the Image Gently Alliance
- ❑ also expressed their interest and support



- **There are no differences between sectors (medical, research, nuclear industry) whereby RPC can be understood as a combination of habits and knowledge of RP**
  - **in all its aspects for patients, workers, population and environment,**
  - **and in all exposure situations, combining scientific and social dimensions.**



## Goal ?

- **The purpose of ‘IRPA Guiding Principles for Establishing a Radiation Protection Culture’ is to capture the opinion and standpoint of RP professionals on what a radiation protection culture must be. This statement has been developed in an inclusive and consultative approach**

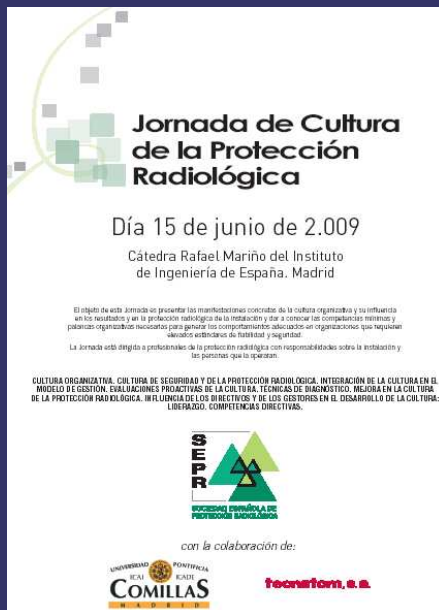
- **The goal of this document : an IRPA RP culture Guidelines for professionals .... From nuclear industry to the medical sector, a common document about culture from the perspective of professionals, geared towards professionals**



# First Actions



The Austrian (OVS), French (SFRP), German (FS) and Swiss (ARRAD) Societies met in Strasbourg, France, in May 2009 to discuss RP culture and identify preliminary relevant topics.

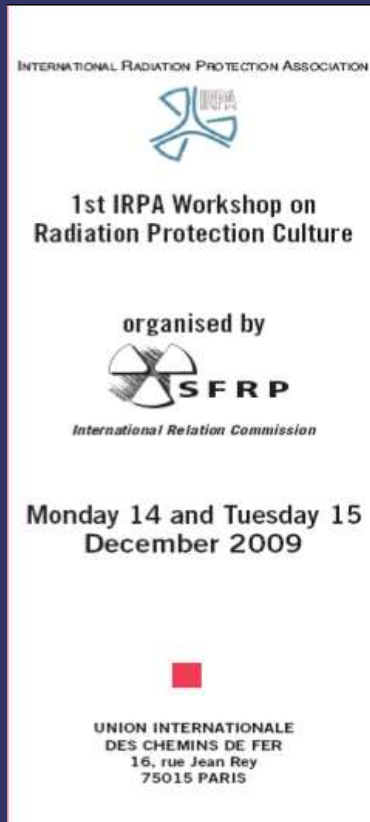


The Spanish Society (SERP) organized a meeting in Madrid in June 2009 to discuss organizational RP culture.

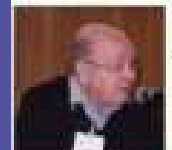




# 1st IRPA Workshop in Paris



- 25 participants
  - Representatives of 9 IRPA European Societies :
    - Austria
    - Belgium
    - France
    - Germany
    - Italy
    - Poland
    - Spain
    - Switzerland
    - United Kingdom,
  - Representatives from WHO and EAN
- IRPA GT CIPR 2013





# Nov 2010 Asian and oceanic workshop



❑ 24 November 2010, *Workshop on RP Culture* in Korea. Sponsored by Korean Association of Radiation Protection

❑ 65 participants (11 non-Koreans)

❑ Representatives of 4 Asian RP Societies:

- China (CSRP)
- Japan (JHPS)
- Korea (KARP)
- Malaysia (MARPA)

But also from 4 other Asian Countries

- Bangladesh
- India
- Pakistan
- Thailand



INTERNATIONAL  
RADIATION  
PROTECTION  
ASSOCIATION



# 2<sup>nd</sup> IRPA Workshop on Radiation Protection Culture

Thursday 10 and Friday 11 February 2011



HPS



NRC



FDA



Image gently



Image wisely



NCI



HPS



HPS



NRC



Peruvian AS



Italian AS



Italian AS



Uruguayan AS



Argentinian AS



Mexican AS



Japanese (AS)



Korean (AS)



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AAPM





# Questions for Paris and Charleston meetings

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- What are the elements of the culture and how could we define it?
- Is it possible to assess the RP culture and what could be the criteria?
- How to engage the stakeholders (regulators, operators, professional organizations...) in the process of developing RP culture.
- What is the role of RP professionals and IRPA AS with regard to RP culture?
- How is regional culture included?
- What are the criteria for success?



# Why are we interested in a specific Radiation Protection Culture?

➤ Embedding RP at a cultural level within an organization is by far the most effective way of delivering the performance to which we all aspire.

- To give visibility to the fundamentals of RP
- To promote radiation risk awareness (conscience)
- To promote shared responsibility among practitioners, operators, manufacturers, management and regulators
- To maintain the RP heritage
- To facilitate its transmission
- To improve continuously the quality and effectiveness of RP
- To contribute to the general safety



# What is meant by Culture?

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- The ideas, beliefs and customs that are shared and accepted by people in a society.
- That complex whole, which includes knowledge, belief, art, morals, law, customs, values, symbols, rituals and any other capabilities and habits, acquired by people as members of society that determine appropriate attitudes and behavior



# Elements and Traits of an Radiation Protection / Safety Culture

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## ➤ Culture comes from three sources:

- (1) beliefs, values, and assumptions of the **founders** of an organization,
- (2) learning **experiences** of group members as the organization evolves, (Groups of people who have shared significant problems, solved them, observed the effects of their solutions, and who have taken in new members)
- (3) beliefs, values, and assumptions brought in by **new members** and leaders.



# Features of a Culture

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- Central value
- Typical and specific structure
- Strong ethos kept in leaders
  - (*ethos: the fundamental and distinctive character of a group, social context, or period of time, typically expressed in attitudes, habits, and beliefs*)
- System of continuation (education) – transfer of knowledge and expertise
- Endurance
- Combination of innovation and conservation
- Social acceptance



## Role and Position of the Radiation Protection Professional

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- includes Engagement with management on developing the Culture within the facility or institution
- Need to develop:
  - Relationship with management and the workforce
  - Relationship with the regulators
  - Involvement of other relevant stakeholders



## different Definition of Culture

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1. *The term “RP culture” means the way in which RP is founded, regulated, managed, performed and preserved by professionals but also reflects the attitudes, beliefs, perceptions and values that they share in relation to RP. (Paris workshop, December 2009)*
2. *Nuclear Safety Culture is the core values and behaviors resulting from a collective commitment (engagement) by leaders and individuals to emphasize safety over competing goals to ensure protection of people and the environment (NRC)*



# Organizational Culture

- **Organizational structure institutionalizes**
  - **how people interact with each other,**
  - **how communication flows and how power relationships are defined.**
  - **It also reflects the value based choices made by the professional society**

- For example, in a total safety culture, employees or practioners not only feel responsible for their own safety, they feel responsible for their peers' safety,
  - and the organizational culture supports them acting on that responsibility.





# Safety Culture and Radiation Protection

<b>Leadership Safety -Values and Actions</b>	<b>Problem Identification and Resolution</b>	<b>Personal Accountability</b>
Leaders demonstrate commitment to safety in their decisions and behaviors	Potential impacts on safety - promptly identified, evaluated, prioritized, addressed and corrected	All individuals take personal responsibility for safety
<b>Work Processes</b>	<b>Continuous Learning</b>	<b>Environment for Raising Concerns</b>
Maintain & enhance safety when planning and controlling work activities	Seek opportunities to learn & Implement safety methodologies	Personnel feel free to raise safety concerns without fear
<b>Effective Safety</b>	<b>Communication</b>	<b>Respectful Work Environment , Questioning Attitude</b>
Communications focus on safety	Trust and respect permeate the organization	Individuals identify discrepancies in existing conditions & inappropriate actions



# Summary

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- What have a definite impact on radiation protection culture?
  - **Strong leadership,**
  - **Education and training,**
  - Establishment of **a positive behavior at the working place** ( Individual and collective behavior)
  - A proper **communication** among all practitioners.
  - Similarly, **learning from events**, incidents and near misses is an important part of culture development.



# Evolution of a Culture

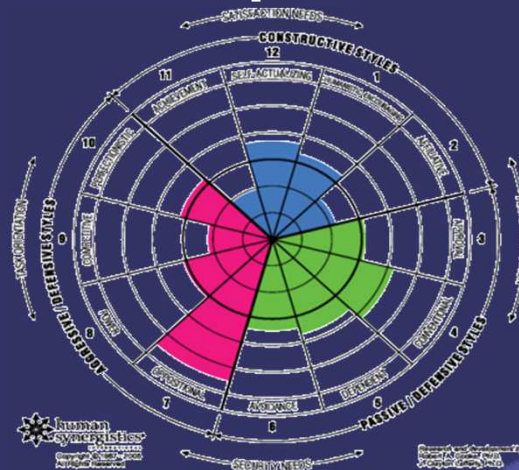
## □ Three main developmental systems:

- Basic compliance system –safety training programs, work conditions, procedures and processes comply with regulations. This is **passive compliance**.
- Self-directed safety compliance system –workers ensure regulatory compliance and take **personal responsibility** for training and other regulatory provisions. This emphasizes **active compliance** with the regulations.
- Behavioral safety system –teaching individuals to scan for hazards, to focus on potential injuries and the safe behavior(s) that can prevent them, and to act safely.



# Assessment of RP culture

- A combination of optimal tools is required to assess the level and quality of radiation protection culture,
  - not only to measure the identified criteria of success,
  - but also to stimulate judgments and observations about positive or negative trends





## An RP organization could provide at local level (examples):

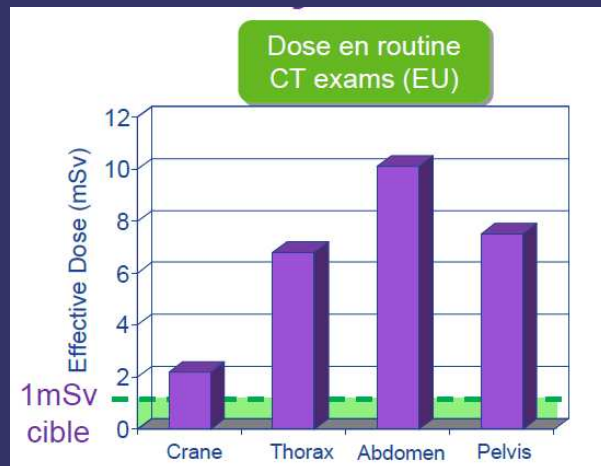
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- A formalized procedure to assure that the workers know the principles of RP
- A process to check if there is an established internal procedure for refreshing and for updating courses and training provided to workers and professionals.
- Formally entrust the position of the RP expert (RSO or equivalent) with the responsibility to teach and refresh theoretical and practical knowledge and RP related duties;
- Formalized self-assessments to evaluate the workers' radiation protection culture and random checks via questionnaires filled in by the patients about radiation protection culture;
- Formalized method to capture (beside the training and courses cases), analyze and possibly implement suggestions and ideas coming from workers (conventional suggestion box);
- Check first the existence of a blame-free policy to report and track errors and near misses in an open and constructive way.



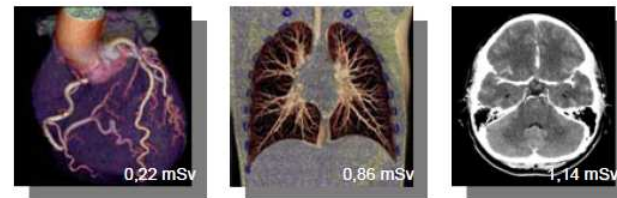
## in the supply of RP equipment, the following tools can be applied:

- **Measure the level of radiation protection culture among vendors of ionizing radiation facilities for nuclear medicine, radiotherapy, diagnostic imaging or industrial applications.** This point may imply the involvement of a regulatory body;
- Establish a procedure requiring that vendors of ionizing radiation facilities or service providers in this area (maintenance, transportation of sources and other third-party services) should **undergo an external independent audit to establish the existence of an appropriate level of radiation protection culture among the staff directly involved;**
- **Review relevant documents in order to provide information on the level of radiation protection culture.**



### Imagerie Basse dose

1 mSv Cardio , Neuro, Colonographie & Thorax  
2 mSv pour Abdomen / Pelvis





# Your role?

## The main stakeholders

- The workforce (at all levels)
- Senior managers and Directors
- Contractors
- Equipment manufacturers, vendors and suppliers
- Regulators and other authorities
- Medical and health professionals, especially but not exclusively those who are using ionizing radiation,
- Functional leaders and risk managers
- Patients

## your behavior

- Display **strong personal leadership and motivation**
- Develop **a narrative on radiation protection in all exposure situations**
- Develop **relationships with management, the workforce and the regulators**
- Consider following the NRC-style approach **to develop a policy statement on radiation protection culture**

- **Developing a “field culture” in addition to the science, engineering or medical culture is a way to anticipate problems and to obtain the commitment of all employees. Radiation protection culture is a learned way of life.**





## Enhancing RP Culture is a Process

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- IRPA is committed to work toward achieving a final set of Guidelines that incorporates approaches from different countries and regions of the world, from medicine, industry and regulators.



# IRPA 13 Glasgow

- Presentation of the first draft
- An entire session was devoted to discuss about the structure and content of the future IRPA Guiding Principles on RP culture with all AS which had an opportunity to air their views.






## On going process Nov 2012 – March 2013

Since the IRPA13 congress, a new version has been prepared, sent to the AS for comments and dispatched for discussion, posted on line after the EC meeting in Berlin in Nov2013 for a last round of feedback from the societies before adoption:

<http://www.irpa.net/page.asp?id=179>



# March –April 2013



**DRAFT**

**IRPA Guiding Principles  
for Establishing a Radiation Protection Culture**

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**Appendices**

**Appendix 1**  
List of Working Group Members

**Appendix 2**  
Nuclear Regulatory Commission's 9 behavioral elements of a general radiation protection culture

**Appendix 3**  
Visual display of assessment tool used by Spanish AS

**Appendix 4**  
The IRPA Guiding Principles for Radiation Protection Professionals on Stakeholder Engagement

**Appendix 5**  
Roadmap of IRPA Radiation Protection Culture guiding principles

- **7 new sets of comments from the AS were received and incorporated**
- **A last Version (8) will be posted after the EC meeting in July.**



# Conclusion

- The aim is to present these guiding principles at regional congresses due to take place in 2014, which will provide an opportunity for celebrating IRPA's 50th IRPA anniversary,
- This guideline is a symbol for the IRPA anniversary, from the past toward to the future but with a common culture



- International Radiation Protection Association
  - <http://www.irpa.net>