

# **Leading Radiological Protection for Nearly a Century**

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**ICRP 90<sup>th</sup> Anniversary Colloquium**

**‘Celebrating 90 Years of Expertise-  
Radiation Protection in the Next Decade’**

**Stockholm, 17<sup>th</sup> October 2018**

**Dr Claire Cousins  
Chair, ICRP**

**1920's**

# IXRPC

- **Founded in 1928 at the 2<sup>nd</sup> International Congress of Radiology (ICR)**
- **Named International X-ray and Radium Protection Committee (IXRPC)**
- **First meeting in Stockholm**

# IXRPC First Members

- **Rolf M. Sievert, Chairman (Sweden)**
- **George W. C. Kaye, Honorary Secretary (United Kingdom)**
- **Stanley Melville, Honorary Secretary (United Kingdom)**
- **Giulio Ceresole (Italy)**
- **Gustav Grossman (Germany)**
- **Iser Solomon (France)**
- **Lauriston S. Taylor (United States)**

# First Publication

## INTERNATIONAL RECOMMENDATIONS FOR X-RAY AND RADIUM PROTECTION

on the proposal of the Radio-Physics Section adopted by the Second International Congress of Radiology in Stockholm, July 27th, 1928

1. The dangers of over-exposure to X-rays and radium can be avoided by the provision of adequate protection and suitable working conditions. It is the duty of those in charge of X-ray and radium departments to ensure such conditions for their personnel. The known effects to be guarded against are:

- (a) Injuries to the superficial tissues;
- (b) Derangements of internal organs and changes in the blood.

### I. *Working Hours etc.*

2. The following working hours etc. are recommended for whole-time X-ray and radium workers:

- (a) Not more than seven working hours a day.
- (b) Not more than five working days a week. The off-days to be spent as much as possible out of doors.
- (c) Not less than one month's holiday a year.
- (d) Whole-time workers in hospital X-ray and radium departments should not be called upon for other hospital service.

### II. *General X-Ray Recommendations.*

- 3. X-ray departments should not be situated below ground-floor level.
- 4. All rooms, including dark-rooms, should be provided with windows affording good natural lighting and ready facilities for admitting sunshine and fresh air whenever possible.

# In the beginning.....



## Restaurant Hasselbacken, Stockholm, Sweden

# The Congress Dinner with the young Rolf Sievert



**1930's**

# IXRPC Early Years

- **Pre WW2, four meetings (1928-1937) in conjunction with International Congress of Radiology**
- **Meetings for only one day**
- **Chairman only for the duration of the meeting**

# IXRPC Early Work

- **Initial recommendations concern qualitative avoidance of threshold or deterministic effects in medical staff**
- **1934 tolerance dose of 0.2 röntgens/day**
- **Equivalent to approx. 500mSv/year (10x the present occupational dose limit for a single year)<sup>A1</sup>**

## Bild 10

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A1

I know, nitpicking... but since later in the presentation you state that the limit is 20 mSv this may be useful

Författare; 2018-10-07

**1940's**

# IXRPC Early Years

- **No meetings from 1937 - 1950**
- **Only two members IXRPC survived WW2, Rolf Sievert and Lauriston Taylor**

**1950's**

# ICRP 1950's

- **1950 Renamed International Commission on Radiological Protection**
- **ICRP works more independently from the ICR**
- **By 1953, five Sub-Committees SCI - V**
- **Late 1950's, Chairman had a more continuous role**

# 1950's Recommendations

- **1950 Maximum permissible dose 0.5 röntgen/week, equivalent to 150mSv/year**
- **1954 Concern for the general public, maximum permissible level 10x lower**
- **1954 Recommended use of absorbed dose in 'rad' and introduced 'rem'**
- **1957 First advice for pregnant women**

# 1950's Recommendations

- **1958 Recommendations *Publication 1***
- **Weekly dose limit replaced by a limit on the accumulated dose equivalent**
- **Corresponded to average annual occupational effective dose 5 rem (50 mSv)**
- **Public dose limit 0.5 rem (5 mSv)/year**

**1960's**

# ICRP 1960's

- **Begins formal relationship with other organisations**
- **First full-time paid Scientific Secretary, David Sowby, appointed 1962**
- **Four Committees C1 – 4 also established 1962**

# ICRP 1960's

- **Committee 1 Radiation effects**
- **Committee 2 Internal exposure**
- **Committee 3 External exposure**
- **Committee 4 Application of Recommendations**

**1970's**

# ICRP 1970's

- **1977: Commission reviewed and updated names and missions of Committees, particularly Committee 2 and 3**
- **Committee 2 Secondary limits**
- **Committee 3 Protection in medicine**

# ICRP 1970's

- **1977: Recommendations *Publication 26***
  - Described and mathematically defined <sup>A2</sup> 'effective dose equivalent' (although name introduced in 1978 statement)
- **New system of dose limitation**
- **Introduced three principles of protection**
- **Origin of justification, optimisation and limitation**

## Bild 22

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**A2**

Am not too happy about 'included', since effective dose equivalent is not actually mentioned, 'only' described and mathematically defined, but I can't think of a better word. Heralded? Implied? No because the definition was there, just not the name...

Författare; 2018-10-07

# ICRP 1970's

- **'No practice shall be adopted unless its introduction produces a positive net benefit**
- **All exposures shall be kept as low as reasonably achievable, economic and social factors being taken into account; and**
- **The [doses] to individuals shall not exceed the limits recommended for the appropriate circumstances by the Commission'.<sup>A3</sup>**

## Bild 23

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**A3**

Leading inverted comma added; brackets added since P26 actually says 'dose equivalent' (but I agree it makse more sense to say 'doses' here)

Författare; 2018-10-07

# 1980's

# ICRP 1980's

- **Some revision of Committee mandates**
- **1988 Registered as a charity in the UK**
- **MC members charity trustees, unpaid**
- **Scientific Secretary no longer a Commission member**
- **1989: First female MC member, Angelina Guskova**



**1990's**

# ICRP 1990's

- 1990 Recommendations *Publication 60*
- Effective dose replaced effective dose equivalent
- Occupational annual dose limit reduced from 50 mSv to 20 mSv (average over 5 years) <sup>A4</sup>
- Public annual dose limit reduced from 5 mSv to 1 mSv
- 1998: Committee 2 Doses from Radiation exposure

**Bild 27**

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**A4**

Again, to be in line with slide # 10

Författare; 2018-10-07

**2000's**

# ICRP 2000's

- **Since 2002, all draft reports subjected to public consultation on the internet**
- **2005: Established Committee 5, Protection of the Environment**
- **Many focussed publications, particularly RP in medicine as growing concern over medical exposures**

# ICRP 2000's

- **2003: First female Committee Chair, Annie Sugier**
- **2009: First female Chair, Claire Cousins**



# ICRP 2000's

- **2007: Recommendations *Publication 103***
- **No change in dose limits**
- **A unified approach to optimisation in all situations**  
A5
- **Constraints and reference levels developed and explained**
- **Focus changed from practices and interventions to exposure situations:**
  - **Planned, Emergency, Existing**

**Bild 31**

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**A5**

I would prefer to avoid 'replace'; the words are still used in P103 but for more limited purposes

Författare; 2018-10-07

**2010's**

# 2010's Change in Dose Limit

- In 2011, ICRP issued a statement regarding the lens of the eye:
- 'For occupational exposure in planned exposure situations, the Commission now recommends an equivalent dose limit for the lens of the eye of 20 mSv/year, averaged over defined periods of 5 years, with no single year exceeding 50 mSv.'

# 2010's Strategic Achievements

- **Established biennial symposia**
- **Established Special Liaison Organisations**
- **Written Strategic Plans**
- **Held open nominations for Committee members (25% change each term)**
- **Change of publisher from 2013**

# 2010's Strategic Achievements

- **Developed ICRP Code of Ethics**
- **Strengthened Secretariat**
- **Changed Constitution**
- **Organisational restructure with four Committees instead of five** <sup>A7</sup>
- **Updated website**



## Bild 35

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**A7**

Presumably you'll be reminding them that C5 was devised from the outset as a project and that integration of environmental issues into the other Cttees was the intention all the time - i.e., environmental issues are not being downplayed but rather the reverse!

Författare; 2018-10-07

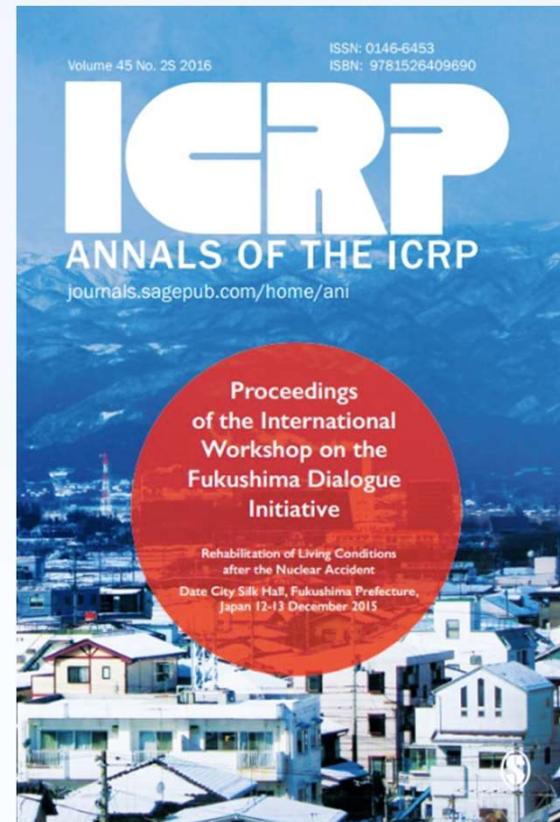
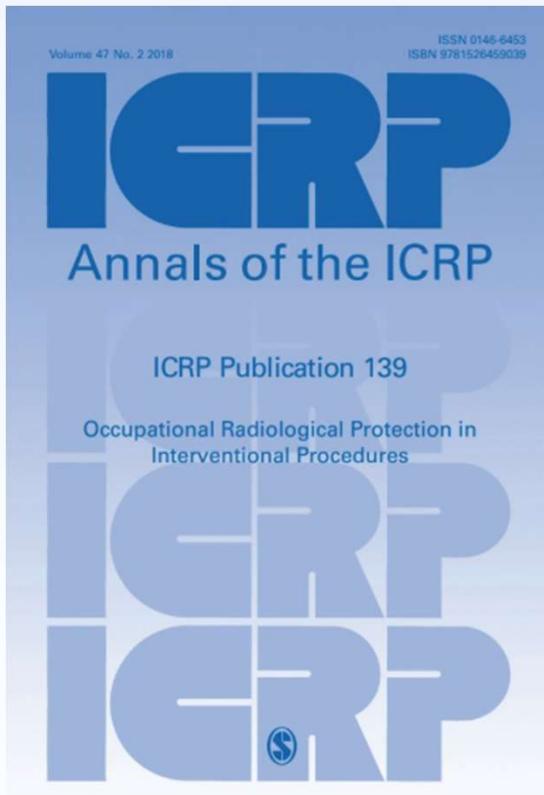
# 2010's Protection of the Environment

- **Several publications trace development from initial framework to information for implementation**
- **Protection of the environment will now be fully integrated into the one system of RP**

# 90<sup>th</sup> Anniversary Drive to Free the Annals

- **Currently: First 60 years Publications (1928-1988) and last general recommendations *Publication 103* free of charge**
- **Goal: make all ICRP publications freely available (except most recent rolling two years)**
- **Needed: €500,000 pledged by end of 2018**

# 2010's New Look Annals



**“Don’t judge a book by its cover”**

**2020's**

# System of Radiological Protection

- **ICRP celebrates its centenary in 2028**
- **Reasonable target to publish the next general recommendations**
- **21 years after the last**



**And finally...**

# ICRP 1968



# Main Commission Manitoba 1976



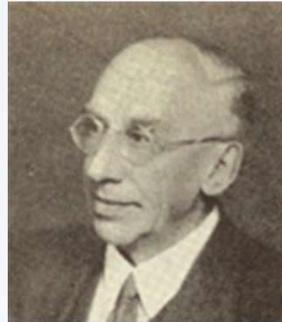
# Chairs of ICRP



**Rolf Sievert**  
1928 &  
1956-1962



**Rene Ledoux  
Lebard**  
1934



**George Kaye**  
1937



**Ernest Rock  
Carling**  
1950-1956



**Edward  
Pochin**  
1962-1969



**C. Gordon  
Stewart**  
1969-1977



**Bo Lindell**  
1977-1985



**Dan  
Bennison**  
1985-1993



**Roger Clarke**  
1993-2005

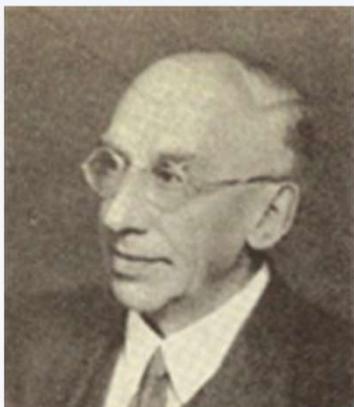


**Lars-Erik  
Holm**  
2005-2009



**Claire Cousins**  
2009-

# Scientific Secretaries of ICRP



**George Kaye**  
1928 - 1934



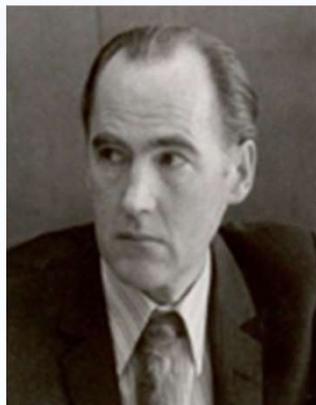
**Stanley Melville**  
1928 - 1931



**Walter Binks**  
1950-1957



**Bo Lindell**  
1957-1962



**David Sowby**  
1962-1985



**Mike Thorne**  
1985-1986



**Hylton Smith**  
1987-1997

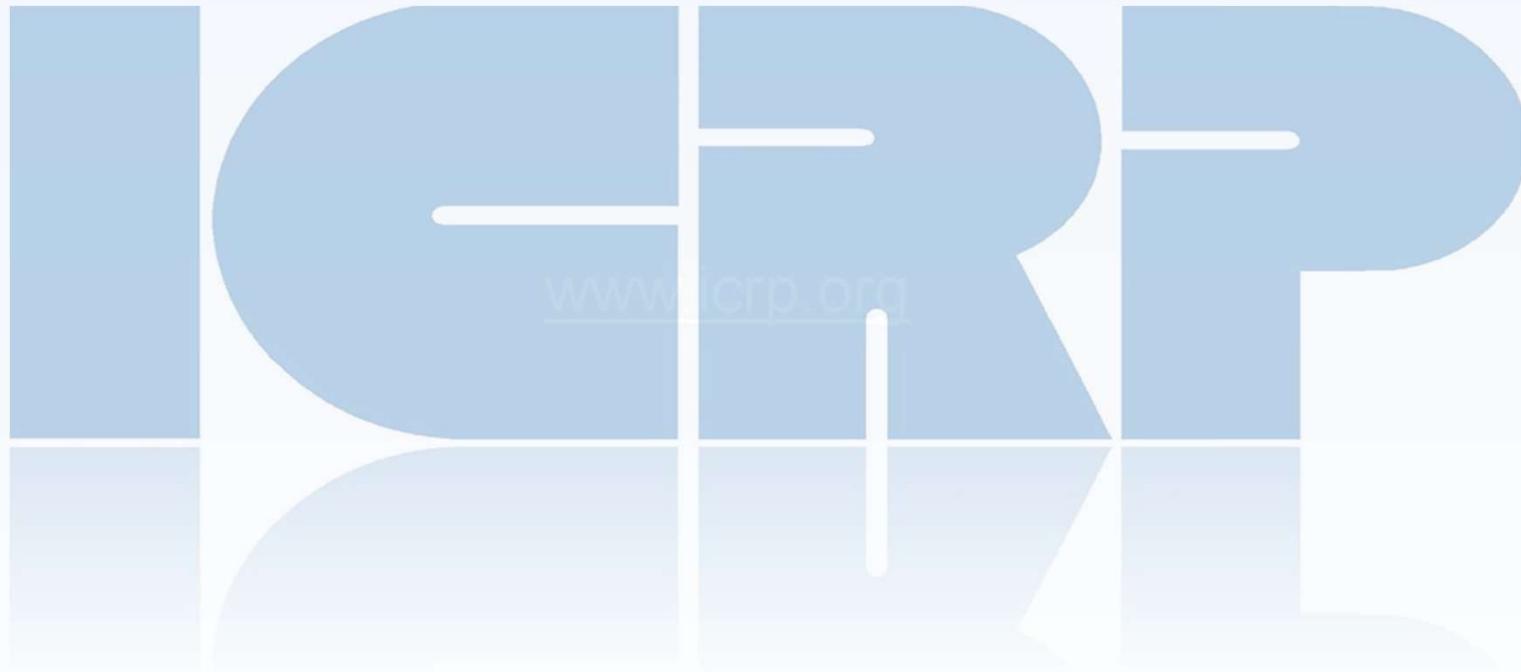


**Jack Valentin**  
1997-2008



**Christopher  
Clement**  
2008-

[www.icrp.org](http://www.icrp.org)

A large, stylized logo for the International Commission on Radiological Protection (ICRP). The letters 'ICRP' are rendered in a bold, blue, sans-serif font. The letters are slightly transparent, allowing a faint version of the website address 'www.icrp.org' to be seen through them. Below the main logo, there is a faint, light blue reflection of the same logo.

[www.ICRP.org](http://www.ICRP.org)