

Workforce Supply / Demand Into The Future

Medical Health Physics

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International Standard Classification of Occupations

Structure, group definitions
and correspondence tables



Medical Physicist

Radiation Protection Expert*

***In the US,
Health Physicist**

Unit Group 2111


Physicists and Astronomers

Physicists and astronomers conduct research and improve or develop concepts, theories and operational methods concerning matter, space, time, energy, forces and fields and the interrelationship between these physical phenomena. They apply scientific knowledge relating to physics and astronomy in industrial, medical, military or other fields.

Tasks include –

- (a) conducting research and improving or developing concepts, theories, instrumentation, software and operational methods related to physics and astronomy;
- (b) conducting experiments, tests and analyses on the structure and properties of matter in fields such as mechanics, thermodynamics, electronics, communications, power generation and distribution, aerodynamics, optics and lasers, remote sensing, medicine, sonics, magnetism and nuclear physics;

Examples of the occupations classified here:

- Astronomer
- Medical physicist 
- Nuclear physicist
- Physicist

Some related occupations classified elsewhere:

- Radiation oncologist – 2212
- Radiologist – 2212
- Specialist physician (nuclear medicine) – 2212
- Radiographer – 3211

Note

It should be noted that, while they are appropriately classified in this unit group with other physicists, medical physicists are considered to be an integral part of the health workforce alongside those occupations classified in Sub-major Group 22: Health Professionals and others classified in a number of other unit groups in Major Group 2: Professionals.

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- (d) applying principles, techniques and processes to develop or improve industrial, medical, military and other practical applications of the principles and techniques of physics or astronomy;
- (e) ensuring the safe and effective delivery of radiation (ionizing and non-ionizing) to patients to achieve a diagnostic or therapeutic result as prescribed by a medical practitioner;
- (f) ensuring the accurate measurement and characterization of physical quantities used in medical applications;
- (g) testing, commissioning and evaluating equipment used in applications such as imaging, medical treatment and dosimetry;
- (h) advising and consulting with medical practitioners and other health care professionals in optimizing the balance between the beneficial and deleterious effects of radiation;

2263 Environmental and occupational health and hygiene professionals

Environmental and occupational health and hygiene professionals assess, plan and implement programs to recognize, monitor and control environmental factors that can potentially affect human health, to ensure safe and healthy working conditions, and to prevent disease or injury caused by chemical, physical, **radiological** and biological agents or ergonomic factors.

Tasks include -

- (a) developing, implementing and reviewing programs and policies to minimize potential environmental and occupational risks to health and safety;
- (b) preparing and implementing plans and strategies for the safe, economic and suitable disposal of commercial, industrial, medical and household wastes;
- (c) implementing prevention programs and strategies for communicable diseases, food safety, waste water treatment and disposal systems, recreation and domestic water quality, contaminated and hazardous substances;
- (d) identifying, reporting and documenting hazards, and assessing and controlling risks in the environment and workplace and advising on compliance with relevant law and regulations;
- (e) developing, implementing and monitoring programs to minimize workplace and environmental pollution involving chemical, physical and biological hazards;
- (f) advising methods to prevent, eliminate, control, or reduce the exposure of workers, students, the public and the environment to radiological and other hazards;**
- (g) promoting ergonomic principles within the workplace such as matching furniture, equipment and work activities to the needs of employees;
- (h) providing education, information, training, and advice to persons at all levels on aspects of occupational hygiene and environmental health;
- (i) recording and investigating injuries and equipment damage, and reporting safety performance;
- (j) coordinating arrangements for the compensation, rehabilitation and return to work of injured workers.

Examples of the occupations classified here:

- Environmental Health Officer
- Occupational Health and Safety Adviser
- Occupational Hygienist
- **Radiation Protection Expert**

Some related occupations classified elsewhere:

- Environmental protection professional - 2133
- Specialist medical practitioner (public health) - 2212
- Specialist nurse (public health) - 2221
- Occupational therapist - 2269
- Health inspector - 3257
- Occupational health and safety inspector - 3257
- Sanitarian - 3257
- Sanitary inspector - 3257

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Notes

Professionals who assess, plan and implement programmes to monitor or control the impact of human activities on the environment are classified in unit group 2133, Environmental protection professionals.



1. An RPE is a person having education and/or experience equivalent to a graduate or masters degree from an accredited college or university in radiation protection, radiation safety, biology, chemistry, engineering, physics or a closely related physical or biological science; and

2.who has acquired competence in radiation protection, by virtue of special studies, training and practical experience. Such special studies and training must have been sufficient in the above sciences to provide the understanding, ability and competency to:

anticipate and recognize the interactions of radiation with matter and to understand the effects of radiation on people, animals and the environment;

evaluate, on the basis of training and experience and with the aid of quantitative measurement techniques, the magnitude of radiological factors in terms of their ability to impair human health and well-being and damage to the environment;

develop and implement, on the basis of training and experience, methods to prevent, eliminate, control, or reduce radiation exposure to workers, patients, the public and the environment.



Membership

The 27 Associate Societies having responded represent some 14,000 IRPA members i.e. approx. 78% of the total number of IRPA members (17,712).

As per the survey results:

- ☐ The percentage of female is 30% and of male is 70%
- ☐ The percentages of members by sectors are as follows:
 - ✓ University/Research/Teaching: 18%
 - ✓ Medical physics: 17%
 - ✓ Other medical: 10%
 - ✓ Nuclear industry: 17%
 - ✓ Other industry: 7%
 - ✓ Regulatory authorities: 6%
 - ✓ Consultancy: 7%
 - ✓ Government and advisory bodies: 8%
 - ✓ Others: 10%

Qualified Medical Physicist in Medical Health Physics

For the purpose of providing clinical professional services, the AAPM defines Qualified Medical Physicist (QMP) as “an individual who is competent to independently provide clinical professional services in one or more of the subfields of medical physics.” One of these subfields is medical health physics.

A QMP meets each of the following credentials:

- 1. Has earned a master's and/or doctoral degree in physics, medical physics, biophysics, radiological physics, medical health physics, or equivalent disciplines from an accredited college or university; and**
- 2. Has been granted certification in the specific subfield(s) of medical physics with its associated medical health physics aspects by an appropriate national certifying body and abides by the certifying body's requirements for continuing education.**



IRPA
INTERNATIONAL RADIATION PROTECTION ASSOCIATION

IRPA GUIDANCE ON CERTIFICATION OF A RADIATION PROTECTION EXPERT



Certifying Bodies - USA

- The American Board of Medical Physics
- The American Board of Health Physics
 - **with** minimum of three years relevant experience in the subfield of medical health physics
- The American Board of Science in Nuclear Medicine
- Medical Health Physics
- Health Physics
 - Qualified Medical Physicist (AAPM)
- Radiation Protection

American Board of Medical Physics (ABMP)

1990 - present

- **Certified in Medical Health Physics (QMP)**
 - **45 are ABMP members**
 - ◆ **Of these, 17 are HPS members**
 - ◆ **For the last 3 years , the nr of diplomates has been 3/year**

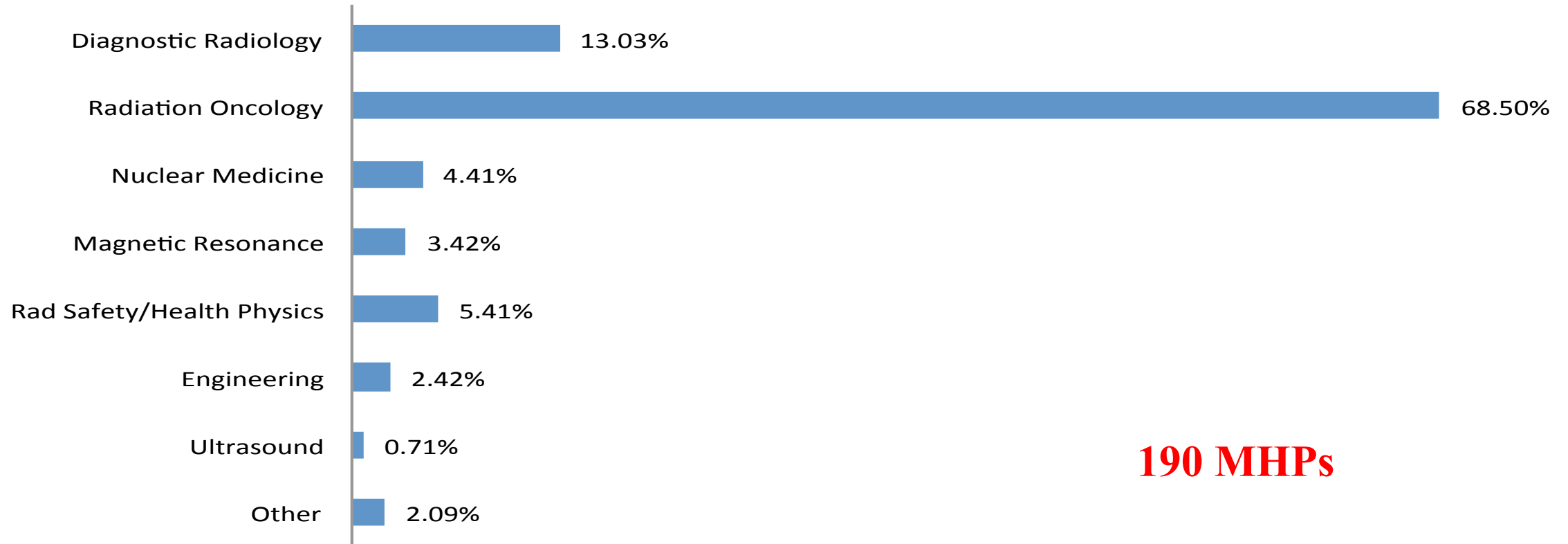
American Board of Health Physics (ABHP):

1960 – present

- **Certified Health Physicists (CHP)**
 - **1525 are members of the American Academy of Health Physics (AAHP)**
 - ◆ **In 2017, there were 54 new CHPs, on the average is 30/year**

Medical Physicists Specialties (AAPM - 2018)

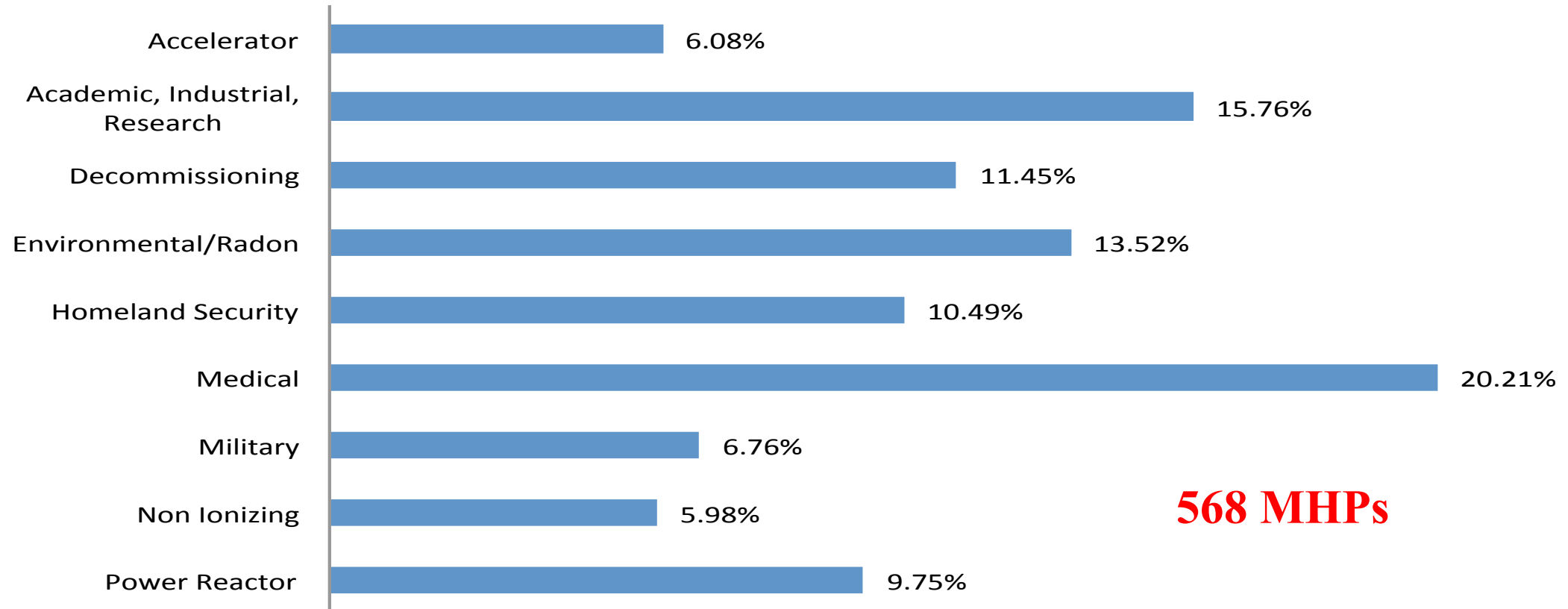
Total member reporting - 3515



190 MHPs

Health Physics Sections (HPS - 2018)

Total member reporting - 2811



2018 Agreement between the ABHP and the ABMP

**Diplomates of either ABHP or ABMP, who
wish to become certified by the other body,
only need to take the LAST of the required
exam of such body**

(i.e. Part 2 for ABHP and Orals for ABMP)



Committees



AAPM

- **Radiation Protection Subcommittee**
- **Workforce Assessment Committee**
 - **Diagnostic Work and Workforce Study SC**

Medical HPS

- **Committee on Medical Health Physics Issues**
 - **Professional Issues**
 - **Scientific Publications**
 - **Educational Resources**
 - **Regulatory Affairs**

Radiation Safety Officer (RSO)

- The RSO is responsible for implementing the radiation protection program in accordance with approved procedures and regulatory requirements
- The authority for the regulatory oversight of radioactive materials is delegated to the RSO via a radioactive materials license
- Follow NCR and/or State Regulations
- Usually chairs the Radiation Safety Committee
- She/He can be an ABR Certified Medical Physicist



Radiation Safety Officer Qualifications for Medical Facilities

Report of AAPM Task Group 160

November 2010

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Strategies and Tactics to Maintain an Adequate Workforce - I

- **Stabilize the dwindling educational programs**
- **Increase the education of new and replacement HPs**
- **Increase and promote employment opportunities for current and future HP students**
- **Increase workforce monitoring**
- **Delineate requirements to enter the HP profession**
- **Develop scope-of-work documents to clarify training under a CHP or QMP**
- **Increase visibility and attractiveness of careers in HP**
- **Retention**

Strategies and Tactics to Maintain an Adequate Workforce - II

- **ABHP Specialty Certification (MHPs)**
- **Professional Diversity (e.g. certify biomed engs)**
- **International Recruitment, Training, Employment**
- **Industry Training and Employment**
- **Enticing Youngsters to become MHPs (Science Fair)**
- **Advocacy and Lobbying**
- **Change MHP Education and Training Scope to include**
 - **Informatics**
 - **Robotics**

EXPERIMENT KIT

AGE
10+

INTRO TO ROBOT DESIGN

ROBOTICS WORKSHOP

THAMES & KOSMOS

CREATIVE
STEM
EDUCATION



306
10
64