13th International Congress of the International Radiation Protection Association

Session F3.1 Ethics and Values (NEA/ICRP)

SECC, Glasgow, Scotland, U.K.; Thursday, May 17th, 2012

Radiation Protection Philosophy

Ethics in Radiological Protection

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Philosophy of radiation protection

1. **Metaphysics**

   (Discovering the nature of radiation and its effects)

2. **Epistemology**

   (Figuring out what is “known”)

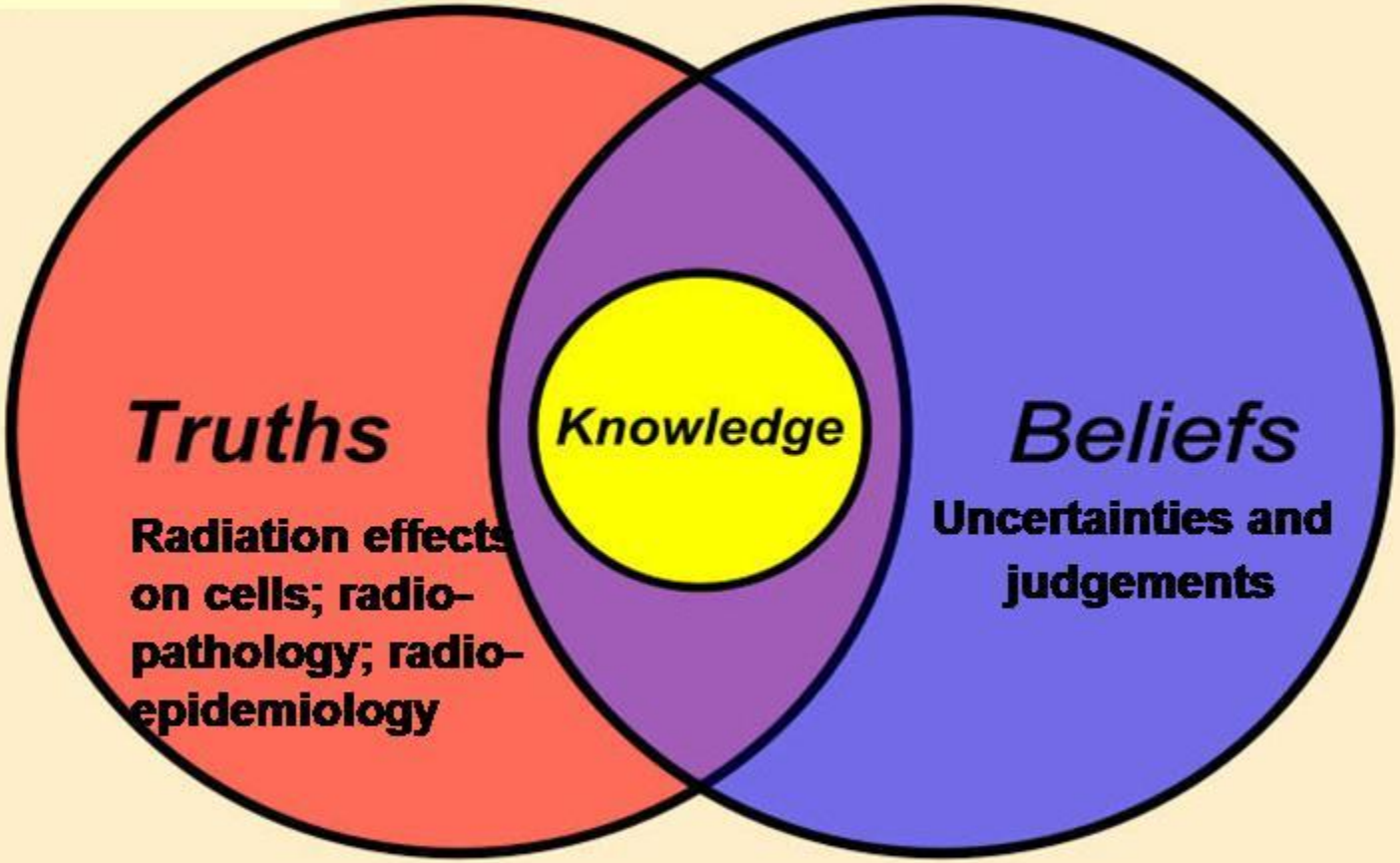
3. **Ethics**

   (Deciding what is “right”)

Epistemology of radiation protection

- …is concerned with the theories of knowledge of radiation and its health effects, especially with regard to their **methods**, **limits**, **validity**, and **scope**.

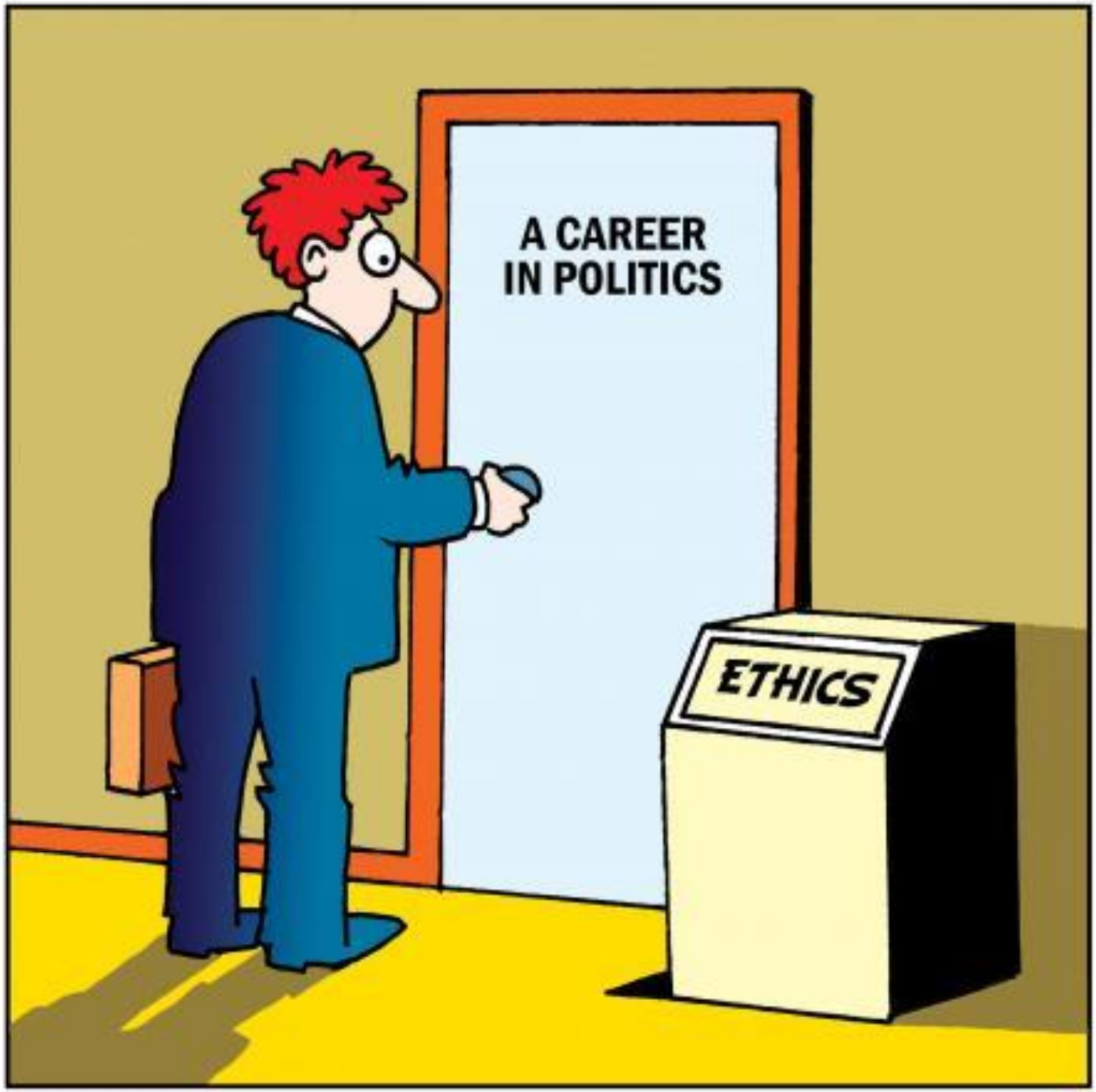
Epistemology

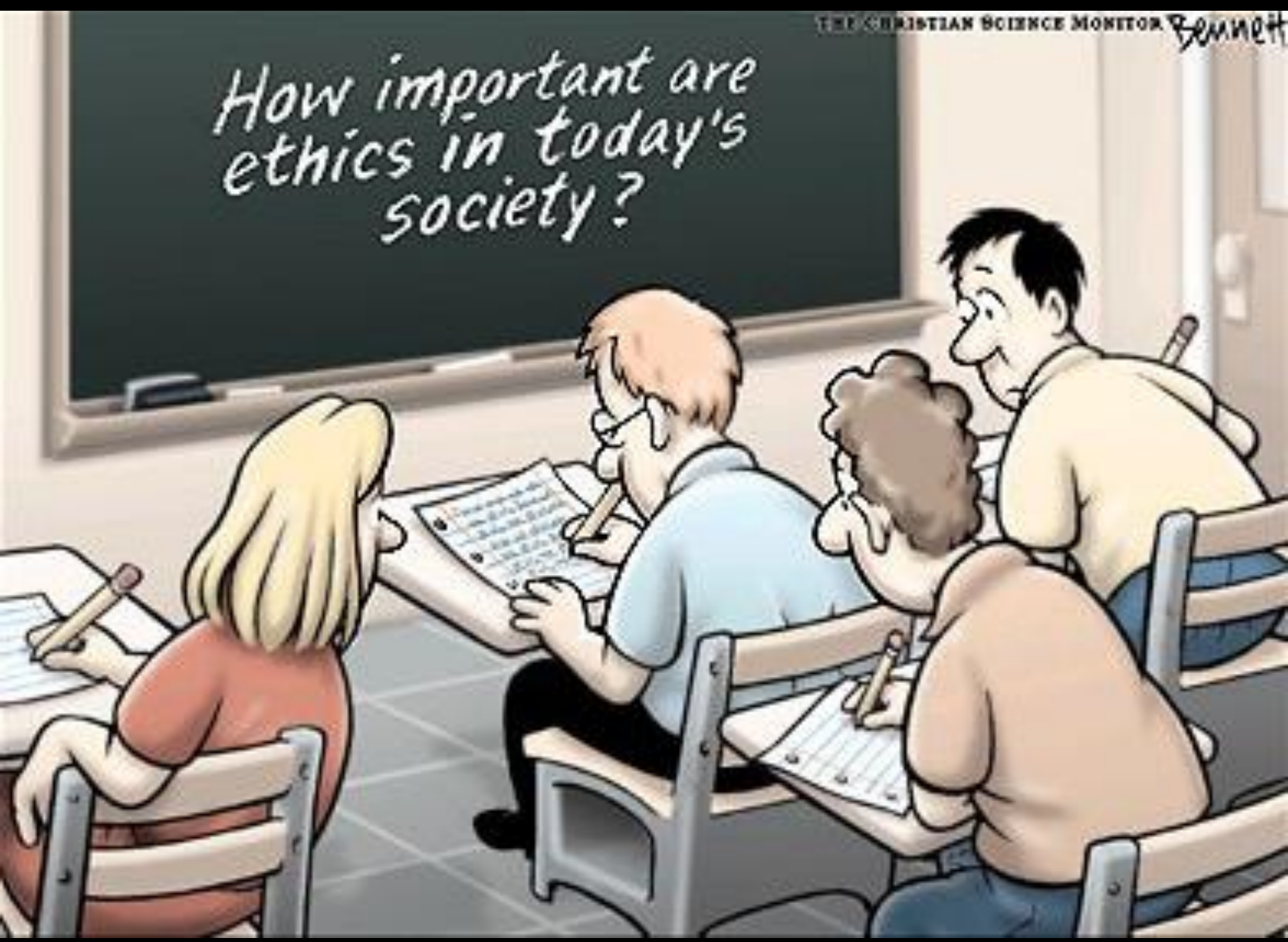


Ethics of radiation protection

Ethics of radiation protection

- …is concerned with the morality of the radiation protection principles.


A CAREER
IN POLITICS
ETHICS


How important are ethics in today's society?
THE CHRISTIAN SCIENCE MONITOR
Bennett

Radiation protection ethics: a long tradition

- 1957 Taylor's Philosophy of radiation protection
- 1992 G. Silini's Sievert Lecture
- 2000 Workshop of the Swedish RP Institute.
- 1999 ICRP Pub.82, §(D.3)
- 2002 IAEA-TECDOC-1270
- 2005 UNESCO 'precautionary principle'
- 2008 NEA-OECD Workshop, Finland
- 2009 NEA-OECD Workshop, Vaulx de Cernay

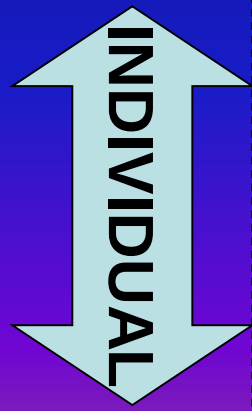
Orientations on Ethics

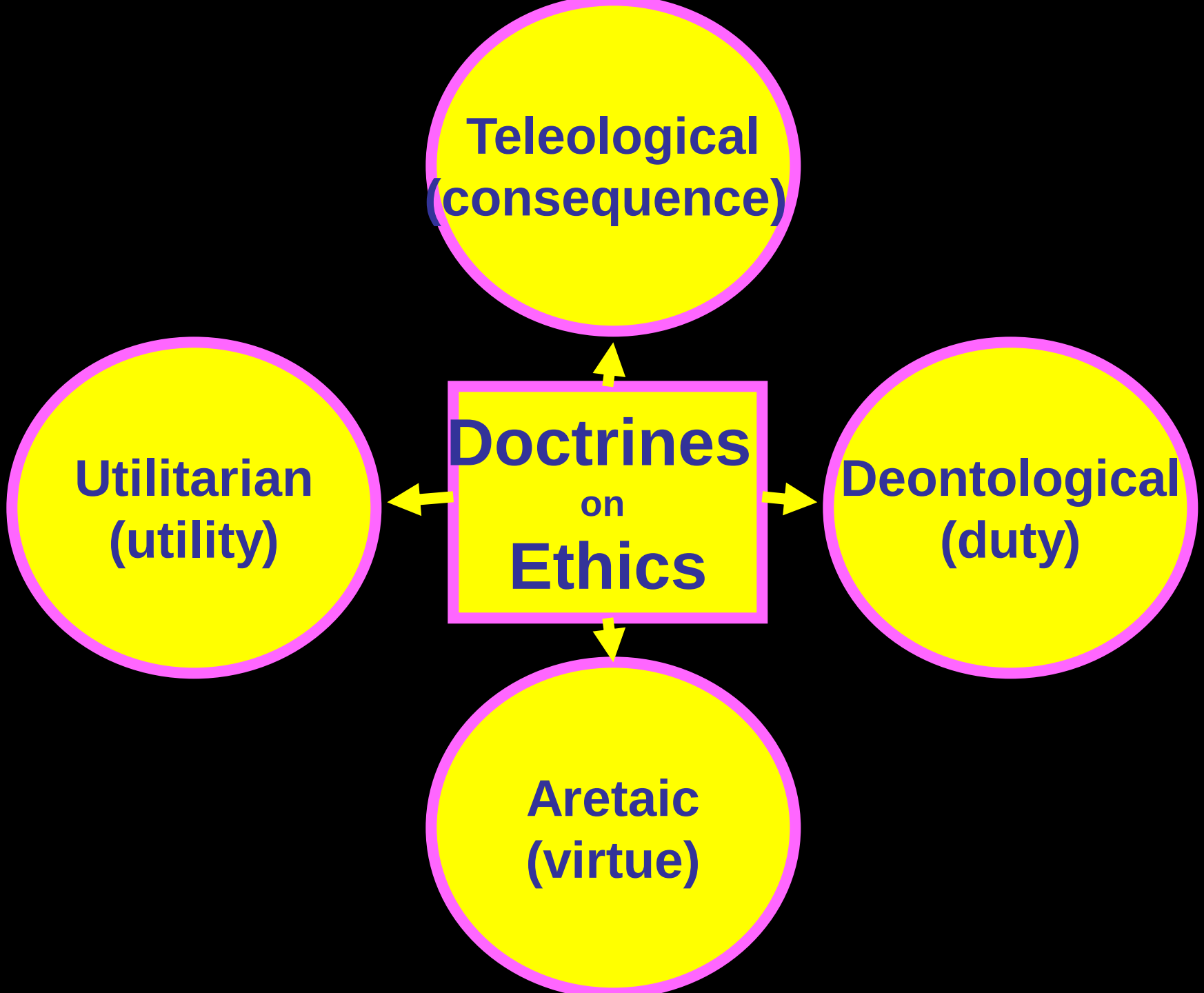
- Societal oriented
- Individual oriented

Fundamental Doctrines on Ethics

- Teleological Ethics (*consequence*)
- Utilitarian Ethics (*utility*)

- Deontological Ethics (based on *duty*)
- Aretaic Ethics (based on *virtue*)




Teleological
(consequence)
Utilitarian
(utility)
Doctrines
on
Ethics
Deontological
(duty)
Aretaic
(virtue)

The ethical doctrines

vis-à-vis

protection

Teleological Ethics (based on *consequence*)

'Mind the good ends, which justify the means'

- **The morality of protective actions should be judged against its overall consequences.**

Utilitarian Ethics (based on *utility*)

'Do the greatest good for the greatest number of people'

- **The morality of protective actions should be judged against its contribution to the overall utility, namely to the best welfare among all people.**

Deontological Ethics (based on *duty*)

'It is impermissible to kill one person to harvest good'

'Not do unto others what they should not do unto you'

- **The morality of protective actions should be judged by the duty to protect individual human beings, rather than by their overall consequences or utility.**

Aretaic Ethics
(based on *virtue*)

'Do good that will not be returned'

- **The morality of protective actions should be judged by their virtuosity rather than their consequences, utility or duty.**

Ethical Aphorisms

Teleological
(consequence)

Mind the ends, which justify the means

Utilitarian
(utility)

Do the greatest good for the greatest number of people

Deontological
(duty)

Not do unto others what they should not do unto you

Aretaic
(virtue)

be virtuous, i.e. do good that will not be returned

The principles of radiological protection

The principles of radiation protection

- The Principle of **Justification** of Actions
- The Principle of **Optimization** of Protection
- The Principle of **Restriction** of Individual Exposure

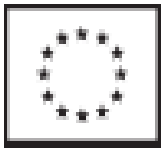
- Intrinsic value of **prudence**: Principle of Protection of Present and Future Generations and their Environment

IAEA Safety Standards

for protecting people and the environment

Jointly sponsored by

Euratom FAO IAEA ILO IMO OECD/NEA PAHO UNEP WHO









IAEA WHO

Safety Fundamentals

No. SF-1

IAEA
International Atomic Energy Agency

Safety Principles

- 1: Responsibility for safety
- 2: Role of government
- 3: Leadership and management for safety
- **4: Justification of actions**
- **5: Optimization of protection**
- **6: Limitation of risks to individuals**
- **7: Protection of present and future generations**
- **8:** Prevention of accidents
- 9: Emergency preparedness and response
- 10: Protective actions to reduce existing or unregulated radiation risks

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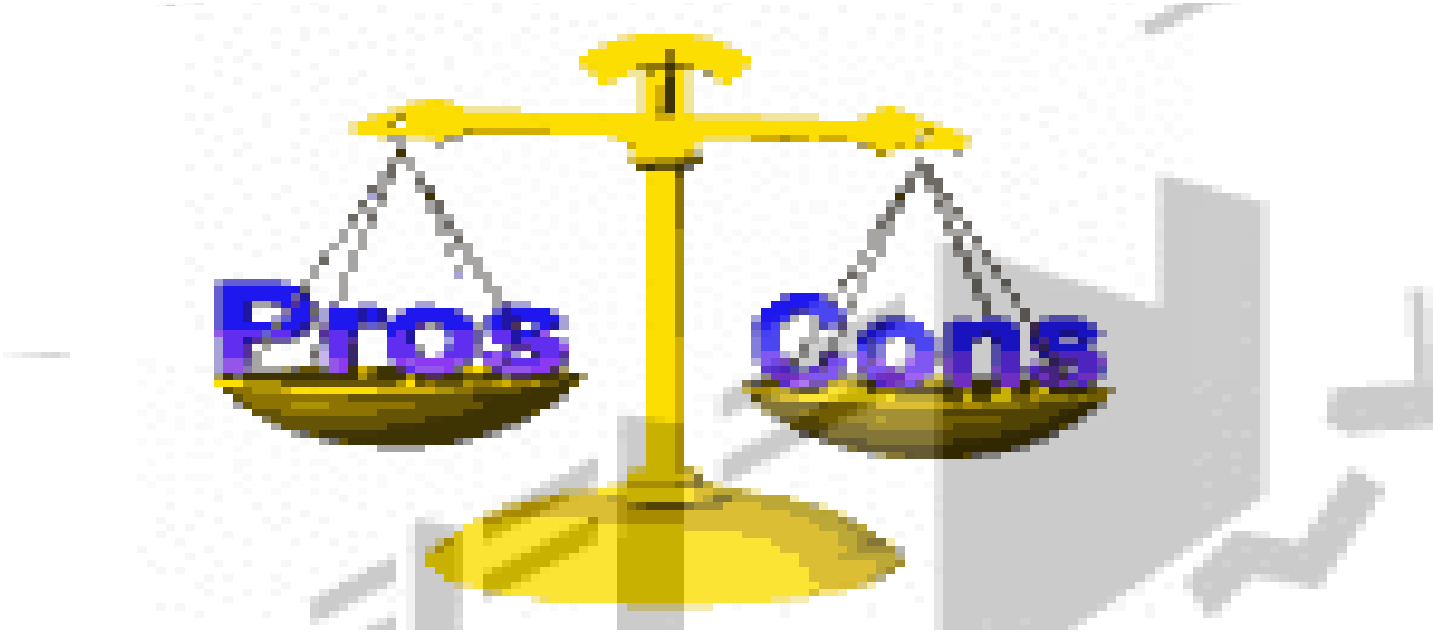
The Principle of Justification

Any decision that alters the radiation exposure

situation should do more good than harm.

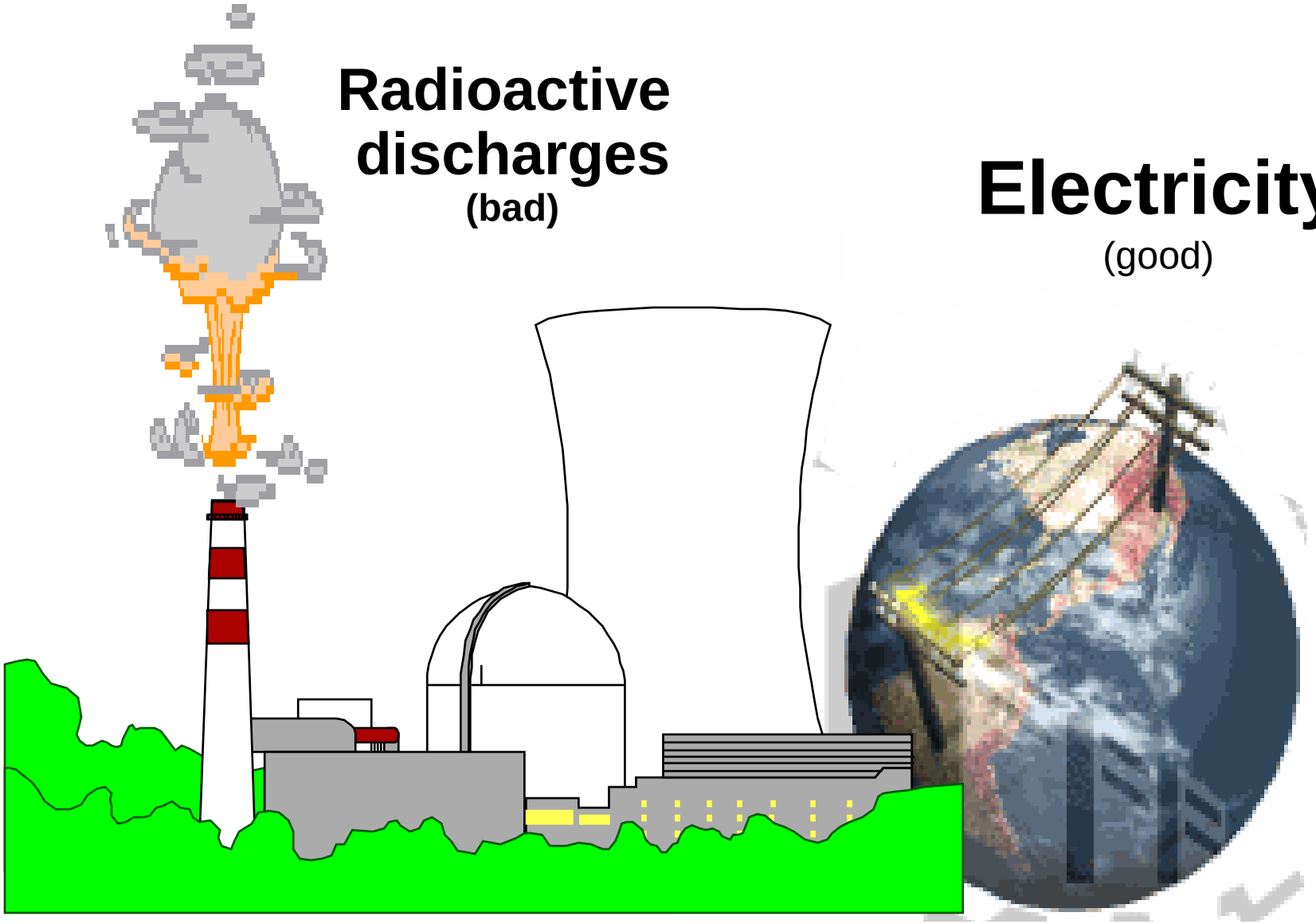
Justification



(good) **>** (bad)

Radioactive discharges
(bad)

Electricity
(good)



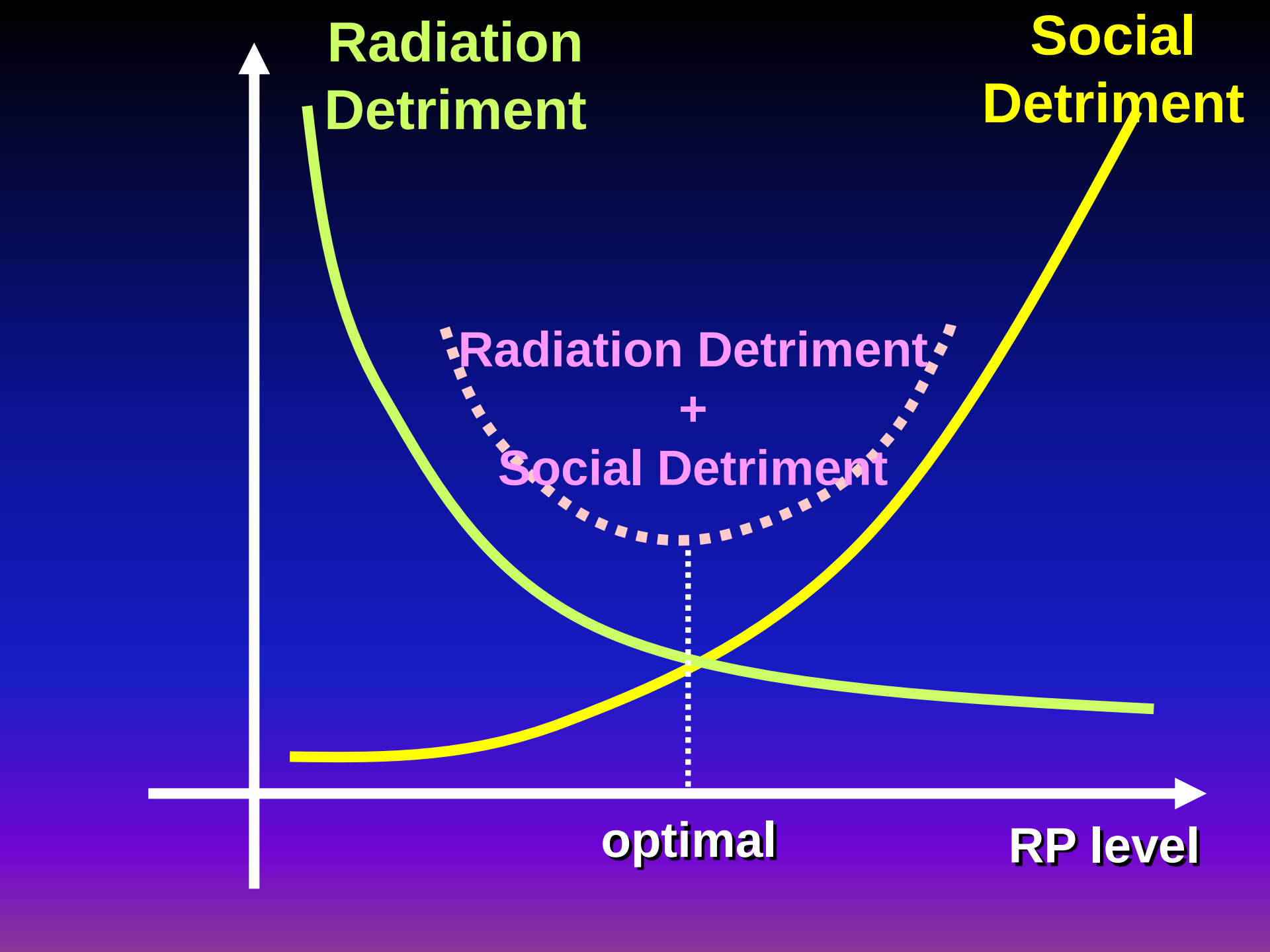
(good) > (bad)

Justification of severe countermeasures, such as evacuation

The Principle of Optimization of Protection

Protection should be the best under the prevailing circumstances

(The likelihood of incurring exposure, the number of people exposed, and the magnitude of their individual doses should all be kept as low as reasonably achievable, taking into account economic and societal factors.)

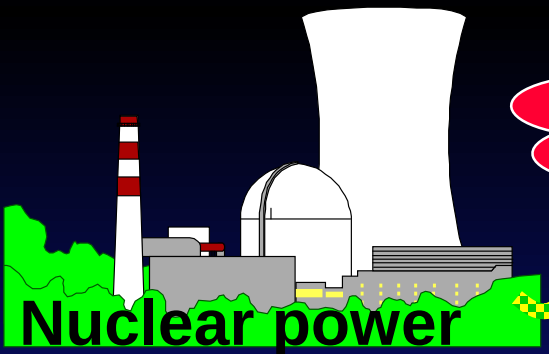

Radiation Detriment
Social Detriment
Radiation Detriment
+
Social Detriment
optimal
RP level

The Principle of Individual Restrictions

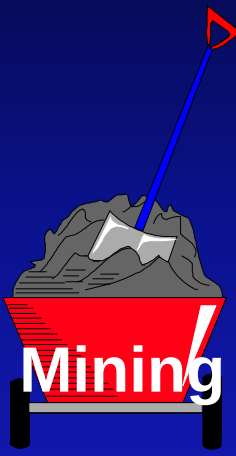
Doses and risks to any individual should not exceed appropriate limits, constrains or reference levels depending on the exposure situation.

Limits,
constraints,
reference level

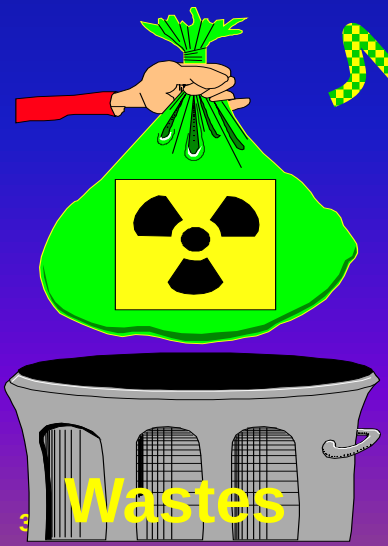
Nuclear power



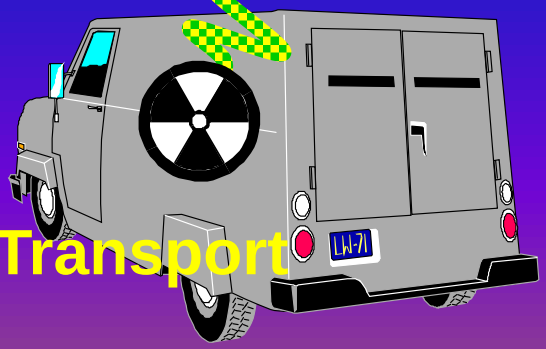
Hospitals



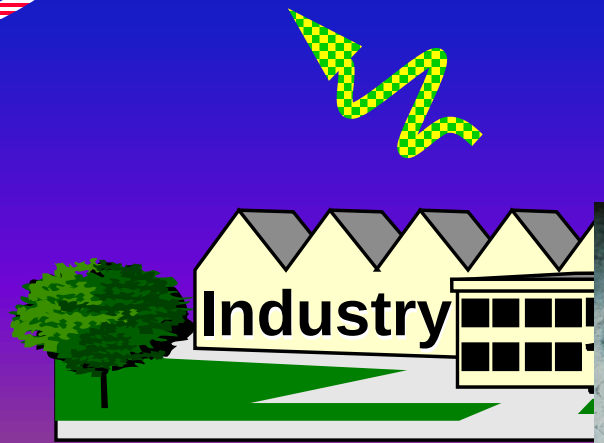
Mining



Wastes



Transport

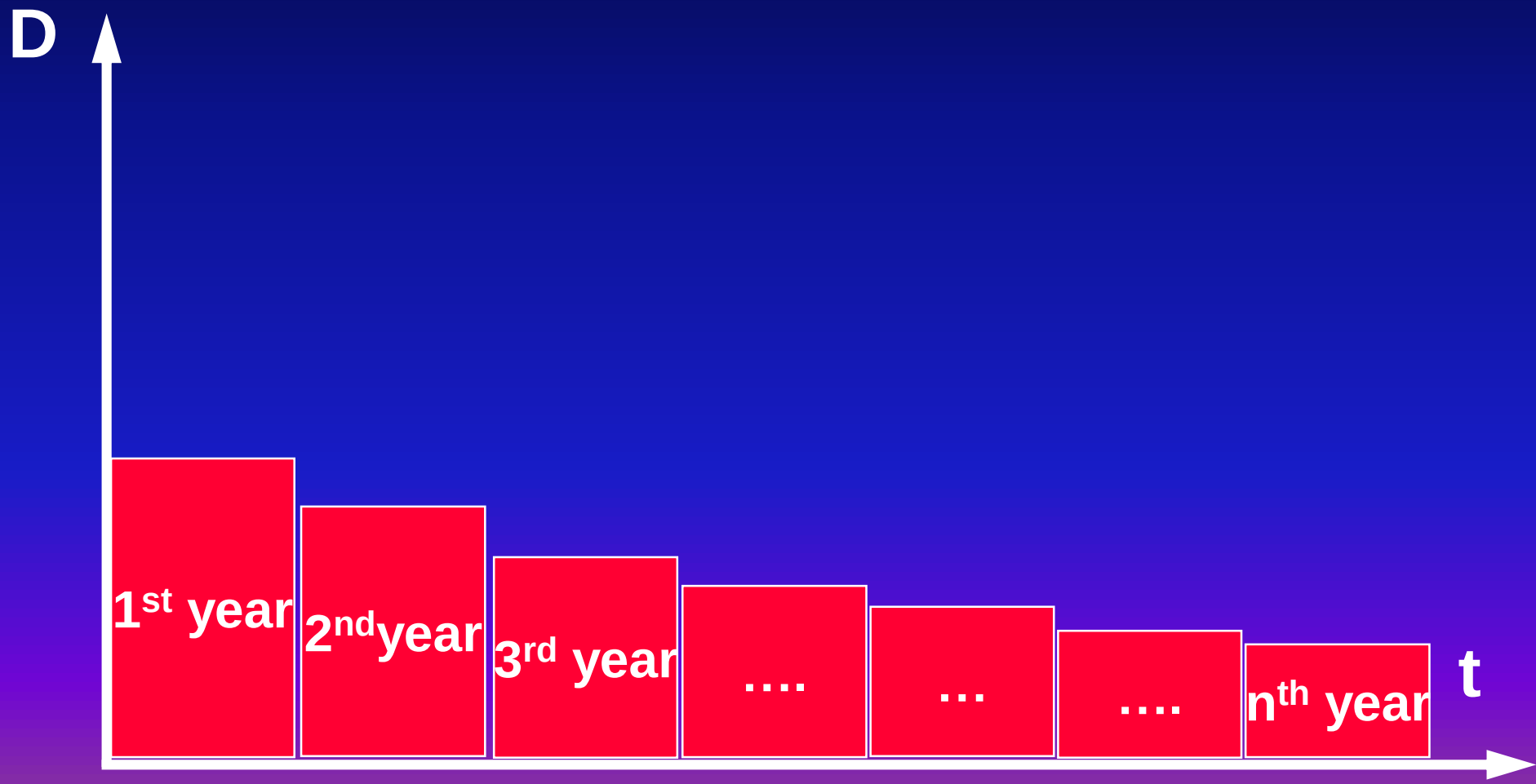


Industry

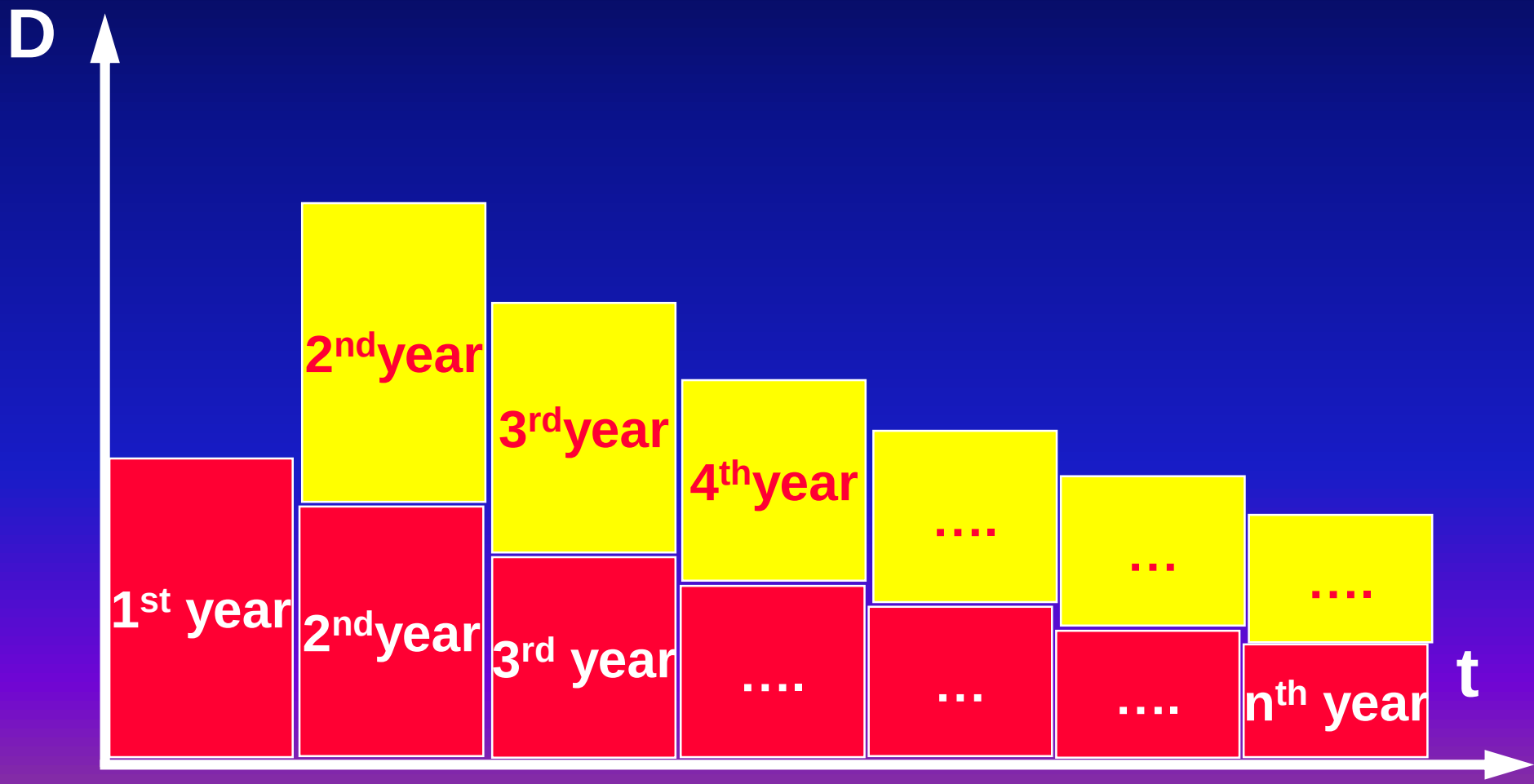
Intrinsic Value:

Protection of Present and Future Generations and their Environment

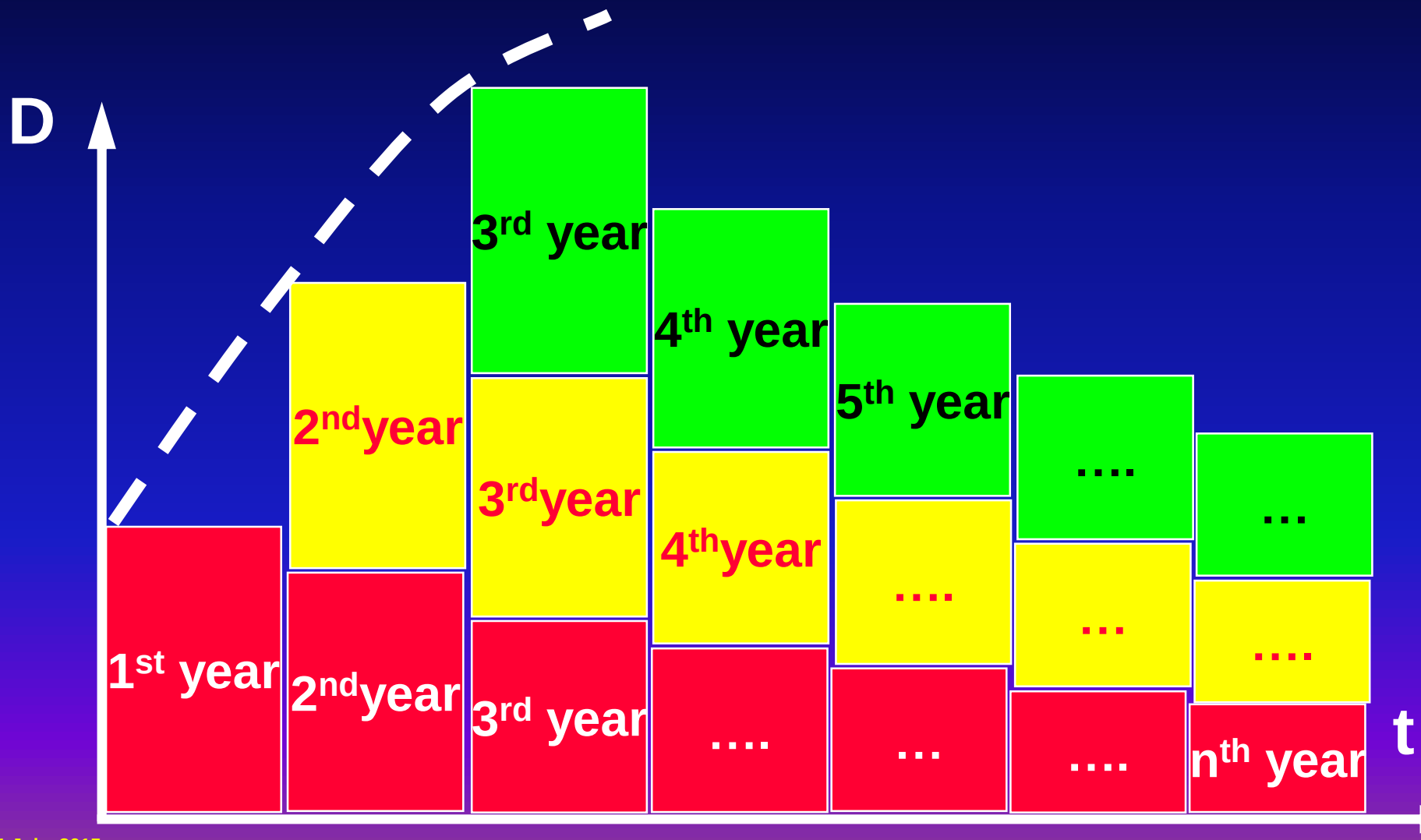
Doses after 1 year of practice



Doses after 2 years of practice

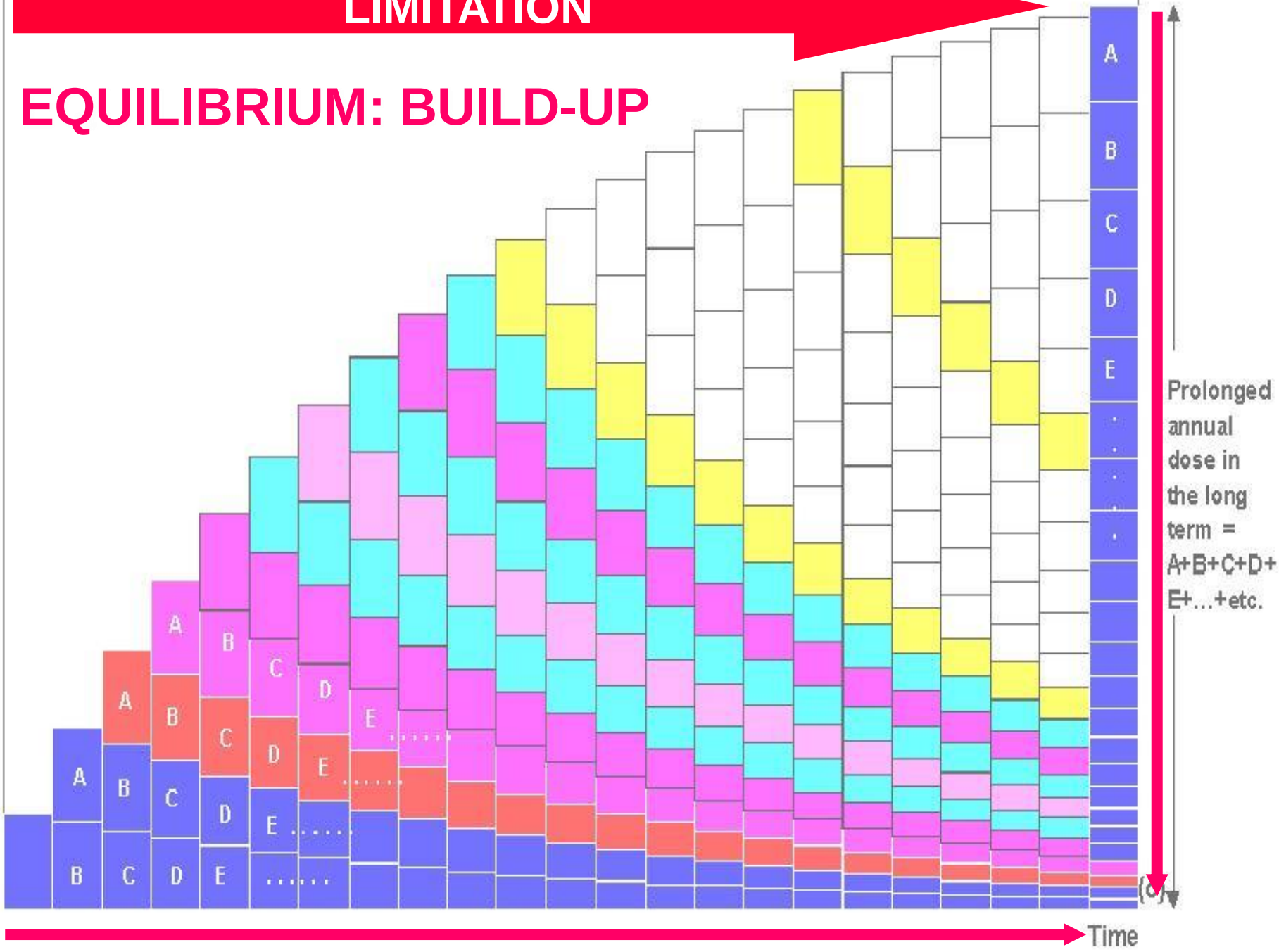


Doses after 3 years of practice



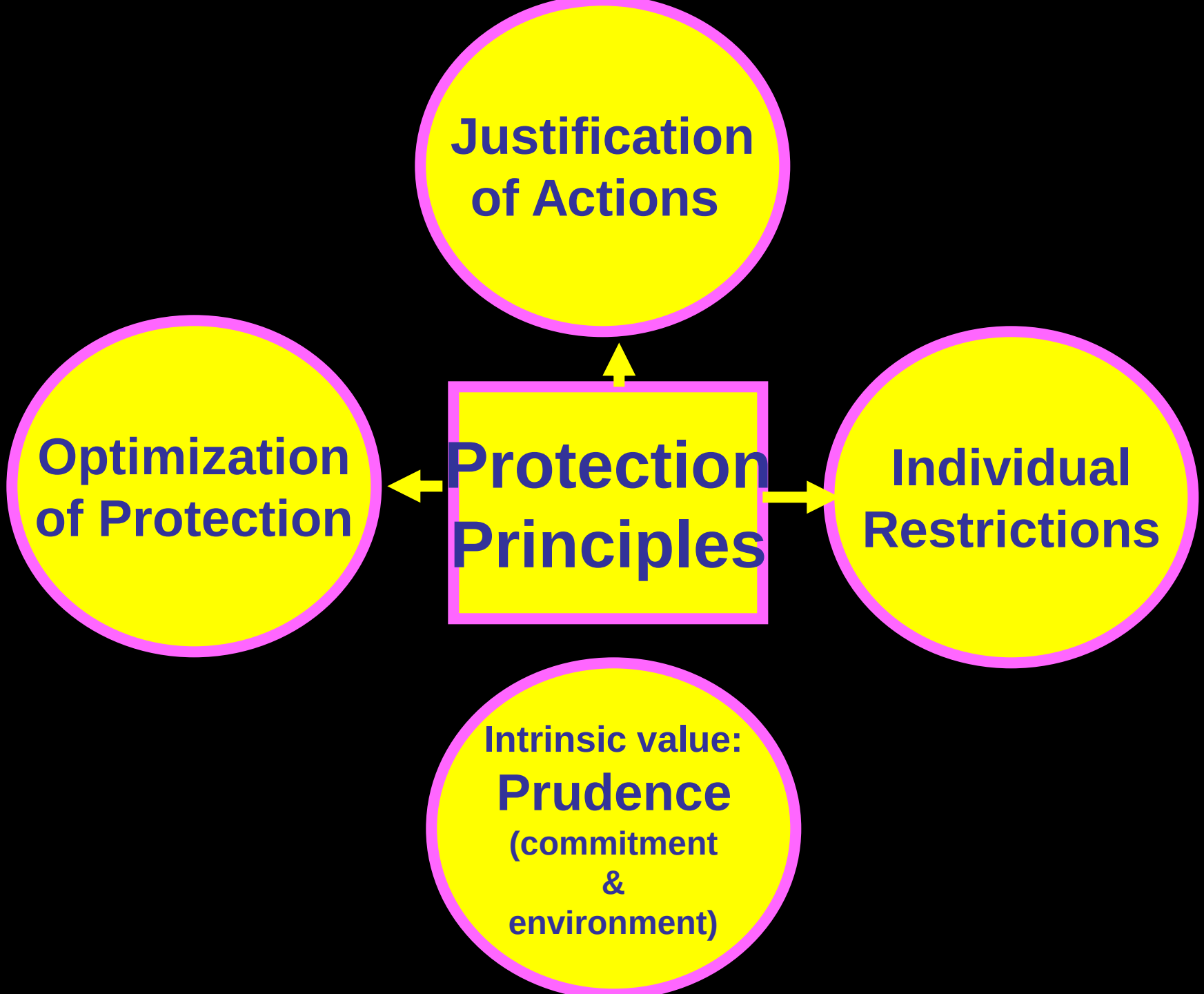
LIMITATION

EQUILIBRIUM: BUILD-UP



Protection of the Environment

- Maintaining biological diversity,
- Ensuring the conservation of species, and
- Protecting the health and status of natural habitats, communities, and ecosystems


Justification of Actions
Optimization of Protection
Protection Principles
Individual Restrictions
Intrinsic value:
Prudence
(commitment & environment)

Teleologism (consequences)

- The morality of protective actions should be judged against its overall consequences.

Justification

- Any decision that alters the radiation exposure situation should do more good than harm

Utilitarianism (utility)

- The morality of protective actions should be judged against its contribution to the overall utility, namely to the best welfare among all people.

Optimization

- The level of radiation protection should be the best under the prevailing circumstances, maximizing the margin of benefit over harm.

Deontologism (duty)

- The morality of protective actions should be judged by the duty to protect individual human beings, rather than by their overall consequences or utility.

Individual Protection

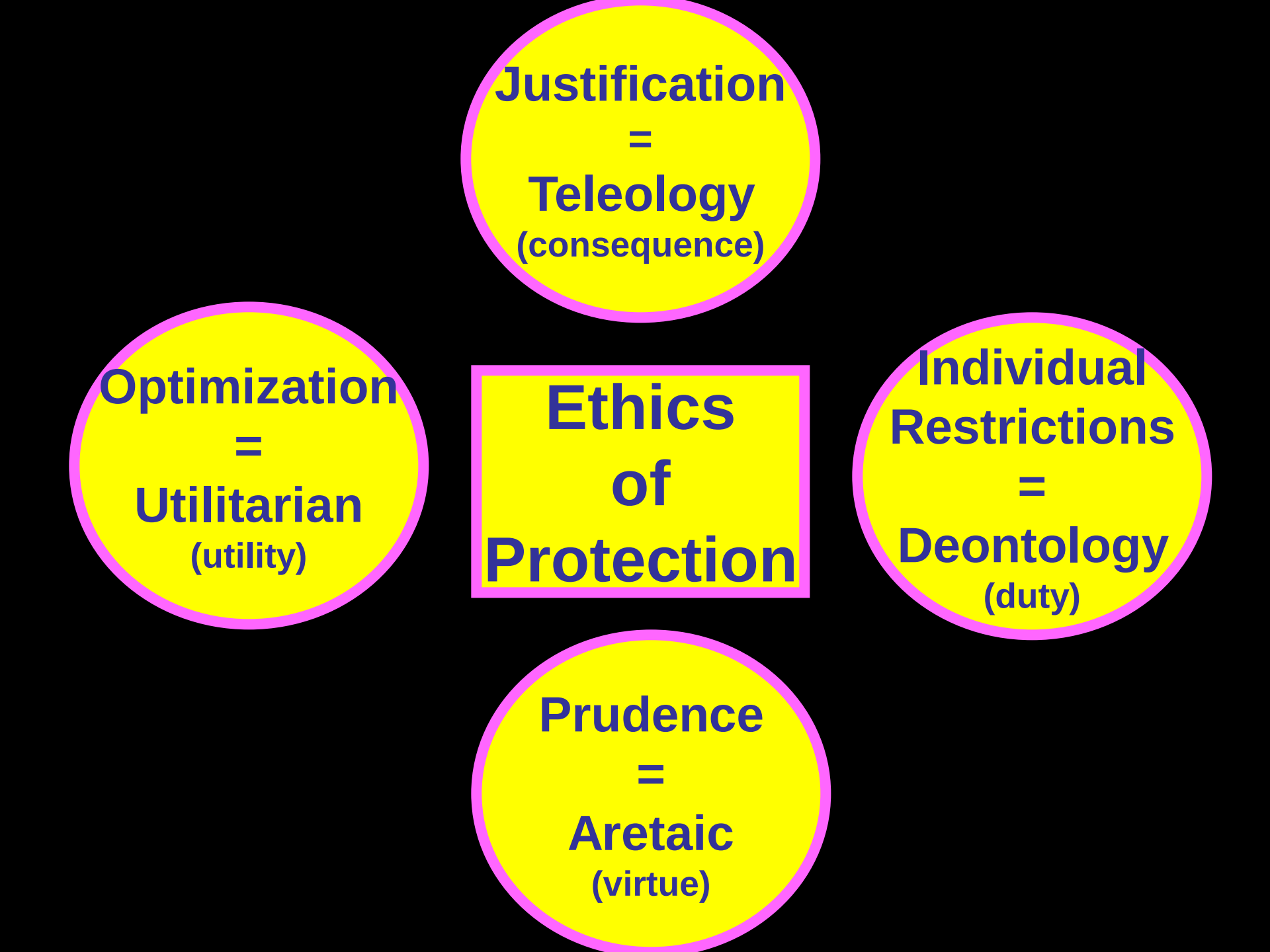
- Inequitable protection options should be prevented by restricting individual doses (dose limits, constraints and reference levels)

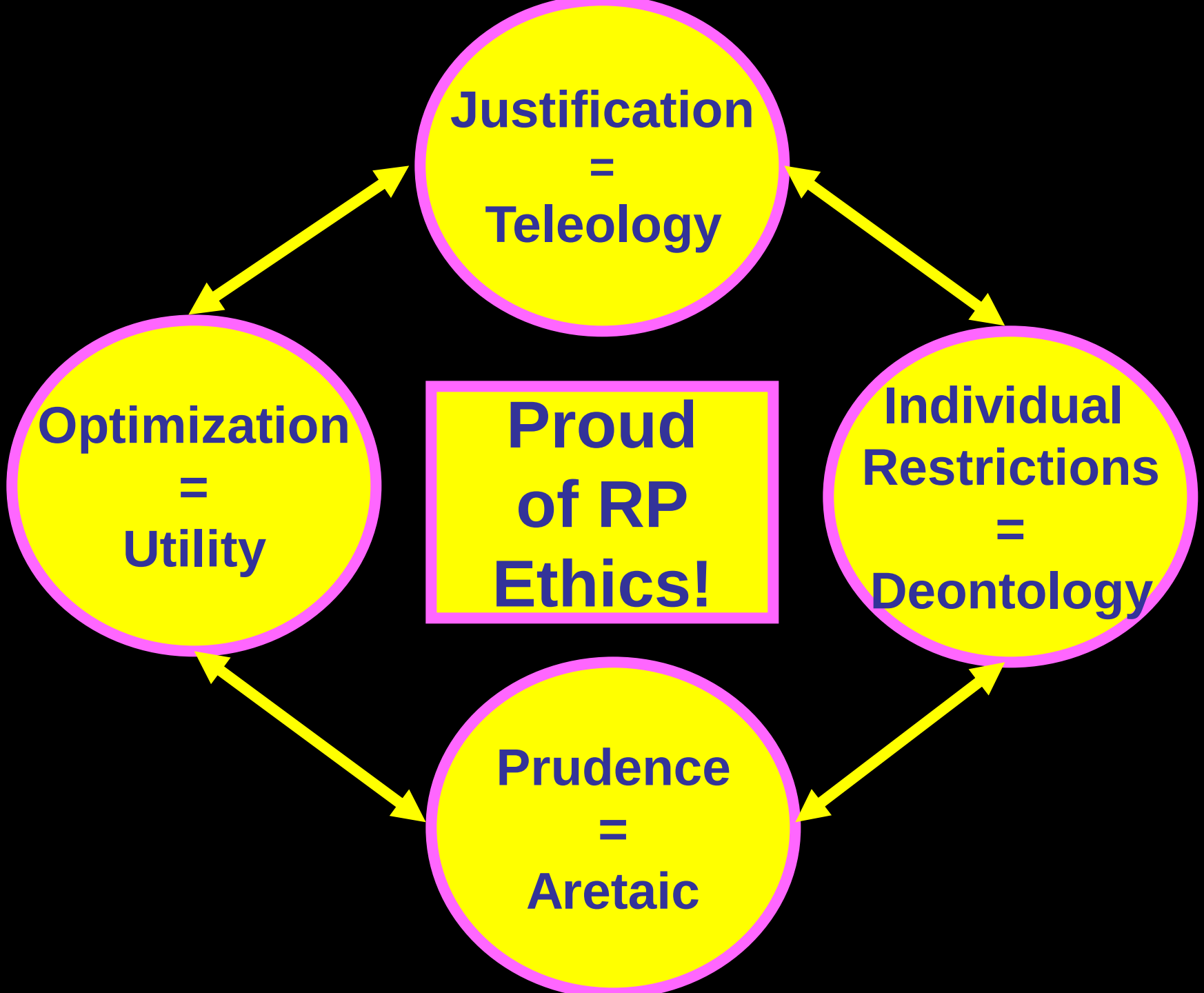
Aretaicism (virtue)

- The morality of protective actions should be judged by their virtuosity rather than their consequences, utility or duty.

Precaution

- Protection should be provided to both, present and future generations and their environment, against scientifically plausible radiation harm even if it is uncertain.


Justification
=
Teleology
(consequence)
Optimization
=
Utilitarian
(utility)
Ethics
of
Protection
Individual
Restrictions
=
Deontology
(duty)
Prudence
=
Aretaic
(virtue)


Justification
=
Teleology
Optimization
=
Utility
Proud
of RP
Ethics!
Individual
Restrictions
=
Deontology
Prudence
=
Aretaic

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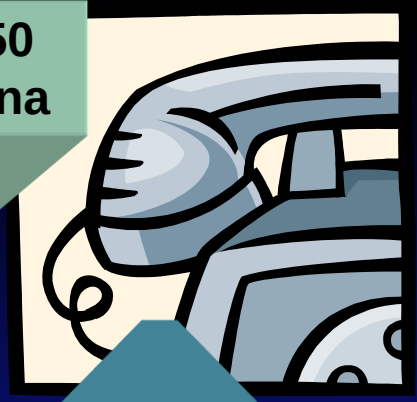

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Than you for your tolerance!

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