Atom on Film

A catalogue of films and other visual aids dealing with nuclear power and associated subjects.

United Kingdom Atomic Energy Authority

UKAEA Films

The following UK Atomic Energy Authority colour films are available on free loan from Golden Films, Stewart House, 23 Frances Road, Windsor, Berks, SL4 3AF. Telephone Windsor 69566 (STD – 07535) (from all 01 exchanges dial 956 9566). These films are also available on video cassette – please state format when booking.

Energy–The Nuclear Option/10 mins/1977
The film describes the importance of energy to our way of life and the contribution which nuclear power has made so far and may make in the future.

The Fast Reactor/23 mins/1979.
The film covers the development of the Fast Reactor to the present day Prototype Fast Reactor (PFR). Safety, reactor control and reprocessing are dealt with. The film shows how the Fast Reactors work and how they differ from and complement thermal reactors by making full use of uranium and by burning plutonium.

Nuclear Power Reactors/22 mins/1976.
A film for non-technical audiences which explains the principles of nuclear fission and how it has been applied to the generation of electricity. Reactor systems developed in the United Kingdom are introduced.

Using Radioactivity/22 mins/1980.
The film describes what radioactivity is, its different forms and how it is controlled and the uses made of it in medicine and industry.

Films from other organisations

(N.B. Not available from Golden Films).

Energy in Perspective/21 mins/1976.
Produced by Balfour Films for BP.
This is a film about energy, one of the world's most precious commodities. It discusses man's historic use of energy and examines the limits of the world's supply of fossil fuels–coal, oil and natural

gas. It considers alternative sources of energy, nuclear, solar, tidal, geothermal etc.

Applications to borrow BP films should be sent to: The BP Film Library, 15 Beaconsfield Road, London, NW10 2LE.

BNFL—at the Heart of Nuclear Power/22 mins/1974. Produced by Ace Film Productions for BNFL.
This film features the comprehensive fuel services operated by British Nuclear Fuels Limited. It covers uranium hexafluoride conversion, facilities for reactor fuel manufacture and fabrication, the transport and reprocessing of irradiated nuclear fuel and fast reactor fuel manufacture.

Windscale—Nuclear Fuel Recycling/22 mins/1978. Produced by Ace Film Productions for BNFL.
A film produced for the public about the transport and reprocessing of spent nuclear fuel from nuclear power stations. The film describes how the work is carried out at Windscale and the precautions taken to protect the health of workers and the general public.

BNFL films are obtainable direct from the Information Services Directorate, British Nuclear Fuels Limited, Risley, Warrington, WA3 6AS.

Overseas:
Atomic energy films are obtainable overseas through the British Information Services or the British Council. In the countries shown below, copies are obtainable from:

USA Senior Representative of the UK Atomic Energy Authority, British Embassy, 3100 Massachusetts Avenue, Washington 20008. DC.

Canada Canadian Film Institute, 303 Richmond Road, Ottawa, Ontario.

Austria International Atomic Energy Agency, Postfach 100 A-1400 Vienna.

France Nuclear Energy Agency, 38 Boulevard Suchet, 75016, Paris.

Holland Publications Office, Stichting Energieonderzoek Centrum, s'Gravenhage.

Atom on slide-tape

The following programmes are intended for projection on Electrosonic 3601 cross-fade equipment. It is strongly recommended that the slide-tape programmes are used to complement a presentation by a speaker from the Atomic Energy Authority who will discuss the subject and answer questions. Arrangements for a presentation and speaker should be made with Mr. T. G. Davies, Information Services Branch, UK Atomic Energy Authority, 11 Charles II Street, London, SW1Y 4QP.

Nuclear Power/18 mins/1979.
How uranium can fulfil our long-term needs for a source of power. How nuclear power works; its safety and its cost.

Energy for Tomorrow/11 mins/1979.
A short summary of the role of science and technology in meeting future energy requirements.

The History of Dounreay/20 mins/1979.
The story of the development of fast nuclear reactors in Dounreay, Caithness, Scotland.

Dounreay/15 mins/1978.
Explains how fast reactors work and describes research and development at the Dounreay Nuclear Power Development Establishment in Scotland.

Research into Methods of Disposal of Radioactive Waste/8 mins/1980.
This programme describes the nature of nuclear waste, how it arises and research being carried out into its disposal.

Slide-tape packs

The Slide-tape packs below are available for purchase from Slide Centre Limited, 143 Chatham Road, London, SW11 6SR.

General interest slide-tape pack:

Energy for Tomorrow

A short summary of the role of science and technology in meeting future energy requirements.

Technical/training slide-tape packs:

The series should prove to be invaluable to anyone studying nuclear physics at 'A' level and beyond and the design of the packs, 36 double-frame slides or a single-frame filmstrip, a cassette commentary, revision notes and questions, take the student step-by-step through the subject.
(A limited number of copies of these packs are also available on a short free loan basis from the Education Centre, AERE, Harwell, Didcot, Oxfordshire, OX11 0QJ).

The Atom

The constituents of the atom – protons, neutrons, electrons. The nucleus. Nuclides. Isotopes.

Atomic Mass

Definition of the unified atomic mass unit. Measurement of atomic masses by mass spectrometry. Atomic masses of elements containing several isotopes.

Radioactivity

Stable and radioactive nuclides. Alpha, beta and gamma decay, and their effects on the parent nuclide.

Radioactive Decay

Exponential decay, plotted on linear and logarithmic graph paper. Calculations involving half-lives.

Nuclear Energy

Einstein's mass-energy equation. Mass defects and binding energies. Possibility of energy from nuclear fission and fusion.

Nuclear Reactions
Writing equations to represent nuclear reactions, and the shorthand notation. Charged particle and neutron reactions. Nuclear cross-sections.

The Chart of the Nuclides
How to use the chart to ascertain abundance of nuclides, modes of decay, energies, nuclear cross-sections. Natural decay series.

Gas-filled Detectors
Detection of ionising radiation. Ionisation chambers, proportional counters, geiger counters: their characteristics and applications.

Solid State Detectors and Neutron Detectors
Limitations of gas-filled detectors, energy resolution. Scintillation counters. Solid state detectors. Photographic films. Reactions for neutron detection.

Radiological Protection—Effects and Units
Effects of ionising radiation on the body. Definition of curie, rad, rem.

Radiation and Contamination
External and internal hazards of radiation. Film badges. Contamination. Containment of radioactive materials.

Nuclear Fission and Criticality
Spontaneous and induced fission, energy release and fission products. Chain reactions. Factors affecting criticality—concentration, mass, shape, moderation. A schematic nuclear reactor.

Nuclear Reactors
The basic components of nuclear reactors for power production and research – fuel, moderator, control rods, coolant, biological shield. The British nuclear power programme and the types of reactor involved.

Research with Reactors

The different types of research reactor from zero energy reactor to high-flux beam reactor. Irradiation experiments to investigate radiation damage and for neutron activation analysis. The applications of radioisotopes produced by irradiation. Neutron beam experiments, neutron radiography, time-of-flight experiments, neutron diffraction and crystal spectrometers.

Accelerators

The fundamentals of charged particle accelerators. High voltage accelerators–Cockcroft and Walton, Van de Graaff. Linear accelerators. Cyclic accelerators–cyclotron, synchrocyclotron, synchrotron.

Nuclear Fusion Research

The basic nuclear reactions for obtaining power from fusion. Plasma temperature, density, confinement time–the Lawson criterion. Inertial and magnetic confinement–the toroidal pinch–the stellarator, the tokamak. Present and anticipated performances of fusion experiments.

Other services

Photographic library

The UKAEA Photographic Library has a wide range of still pictures and diagrams on all aspects of nuclear power. Slides for illustrating lectures can be selected, and display sets of large colour prints are available for temporary display purposes.

Mobile exhibition on nuclear power

UKAEA establishments have available for free loan a small (15 panel) mobile exhibition on nuclear power which can be easily erected and dismantled and is suitable for schools, public libraries etc.

Publications

Leaflets, reprints of articles in ATOM, the Authority's monthly bulletin, and other literature on all aspects of the industry and the current debate are available. A representative selection will be provided on request.

For further information on the above services write to: The UK Atomic Energy Authority, Information Services Branch, 11 Charles II Street, London, SW1Y 4QP.

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