CO-ORDINATED RESEARCH PROJECTS

**Nuclear Power**

Establishment of a thermophysical properties database for materials of LWRs and HWRs: 1999–2003
Information management solutions for systematic approach to training (SAT) applications: 2000–2003
Intercomparison of techniques for pressure tube inspection and diagnostics: 1998–2001
National approaches to correlate nuclear power plant performance targets and operation and maintenance budget: 1999–2003
Nuclear power plant outage coding systems: 1999–2000
Potential of thorium based fuel cycles to constrain plutonium and to reduce long term waste toxicities: 1995–2000
Scientific basis and engineering solutions for cost effective assessments of software based instrumentation and control systems: 1999–2003
Surveillance programme results application to reactor pressure vessel integrity assessment: 2000–2003
Updated codes and methods to reduce the calculational uncertainties of liquid metal fast reactor reactivity effects: 1999–2003
Use of a thorium based fuel cycle in accelerator driven systems (ADS) to incinerate plutonium and to reduce long term waste toxicities: 1996–2000

**Nuclear Fuel Cycle and Waste Technology**

Anthropogenic analogues and their use in confidence building with regard to the disposal of high level, long lived radioactive waste: 1999–2003
Decommissioning techniques for research reactors: 1997–2001
Evaluation of the safety, environmental and non-proliferation aspects of the partitioning and transmutation of actinides and fission products: 1996–2000
Hydrogen and hydride induced degradation of the mechanical and physical properties of zirconium based alloys: 1998–2003
Long term behaviour of low and intermediate level waste packages under repository conditions: 1997–2002
Technologies and methods for long term stabilization and isolation of uranium mill tailings: 2000–2004
Treatment of liquid effluent from uranium mines and mills during and after operation: 1996–2001

**Comparative Assessment of Energy Sources**

Impact of infrastructural requirements on the competitiveness of nuclear power: 1999–2002
Role of nuclear power and other options in meeting international goals on greenhouse gas emission reductions: 1999–2001

**Food and Agriculture**

A molecular and genetic approach to develop sexing strains for field application in fruit fly sterile insect technique programmes: 1994–2001
Alternative methods to gas and high performance liquid chromatography of pesticide residues in grains: 1997–2002
Assessment of soil erosion through the use of caesium-137 and related techniques as a basis for soil conservation, sustainable production and environmental protection: 1995–2001
Assessment of the effectiveness of vaccination strategies against Newcastle Disease and Gumboro Disease using immunoassay based technologies for increasing farmyard poultry production in Africa: 1998–2002


Cellular biology and biotechnology including mutation techniques for the creation of new useful banana genotypes: 1994–2001

Classification of soil systems on the basis of transfer factors of radionuclides from soil to reference plants: 1998–2003


Developing, validating and standardizing methodologies for the use of PCR and PCR-ELISA in the diagnosis and monitoring of control and eradication programmes for trypanosomosis: 1999–2004


Development of improved attractants and their integration into fruit fly sterile insect technique management programmes: 2000–2006

Development of management practices for sustainable crop production systems on tropical acid soils through the use of nuclear and related techniques: 1999–2004


Evaluating the use of nuclear techniques for the colonization and production of natural enemies: 1999–2004


Genetic applications to improve the sterile insect technique for tsetse control/eradication: 1997–2003

Genetic improvement of underutilized and neglected crops in low income food deficit countries through irradiation and related techniques: 1998–2003

Improved attractants for enhancing the efficiency of tsetse fly suppression operations and barriers systems used in tsetse control/eradication campaigns: 1994–2002

Improvement of tropical and subtropical fruit trees through induced mutations and biotechnology: 2000–2005

Irradiation as a phytosanitary treatment of food and agricultural commodities: 1998–2003

Management of nutrients and water in rainfed arid and semi-arid areas for increasing crop production: 1997–2002

Molecular characterization of mutated genes controlling important traits for seed crop improvement: 1999–2004

Monitoring of contagious bovine pleuropneumonia in Africa using enzyme immunoassays: 1997–2002


Quality assurance of mass produced and released fruit flies: 1999–2004

Quality control of pesticide products: 2000–2005

Use of isotope techniques in studies on the management of organic matter and nutrient turnover for increased, sustainable agricultural production and environmental preservation: 1995–2000

Use of non-structural protein of the foot and mouth disease virus to differentiate between vaccinated and infected animals: 1999–2004

Use of nuclear and colorimetric techniques for measuring microbial protein supply from local feed resources in ruminant animals: 1996–2001

Use of nuclear and related techniques to develop simple tannin assays for predicting and improving the safety and efficiency of feeding ruminants on tanniniferous tree foliage: 1998–2003

Use of nuclear techniques for developing integrated nutrient and water management practices for agroforestry systems: 1998–2005


**Human Health**

Application of nuclear techniques in the prevention of degenerative diseases (obesity and non-insulin dependent diabetes) in ageing: 1998–2002

Aspects of radiobiology applicable in clinical radiotherapy: Increase of the number of fractions per week: 1998–2005
Assessment of levels and health effects of airborne particulate matter in mining, metal refining and metal working industries using nuclear and related analytical techniques: 1996–2000
Bone single photon emission computer tomography in the management of patients with unexplained back pain: 1997–2000
Comparison of clinical applications software between nuclear medicine laboratories by software phantoms developed by the IAEA and COST-B2: 1999–2003
Comparative evaluation of ictal brain single photon emission computer tomography, magnetic resonance imaging and X ray computerized tomography of the brain in the management of patients with refractory seizures: 2000–2003
Comparative international studies of osteoporosis using isotope techniques: 1994–2000
Development and validation of an Internet based clinical and technical study communication system for nuclear medicine: 1998–2001
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Health impacts of mercury cycling in contaminated environments studied by nuclear techniques: 1999–2004
In vivo imaging for infection and inflammation: 1997–2000
Intravascular radionuclide therapy using beta emitting radiopharmaceuticals for the prevention of re-stenosis following percutaneous transluminal coronary angioplasty: 2000–2004
Isotopic evaluations in infant growth monitoring: 1999–2002
Local production and evaluation of primary reagents for the radioimmunoassay of alpha fetoprotein: 1997–2000
Management of liver cancer using radionuclide methods with special emphasis on trans-arterial radioconjugate therapy and internal dosimetry: 2000–2005
Molecular typing of mycobacteria strains in the management of multi-drug resistant tuberculosis: 1997–2000
Radiochemical, chemical and physical characterization of radioactive particles in the environment: 2000–2005
Radioimmunoassay of advanced glycation end products in the long term management of diabetes mellitus: 2000–2003
Randomized clinical trial of radiotherapy combined with mitomycin C in the treatment of advanced head and neck tumours: 1994–2003
Reference Asian Man Project (Phase 2): Ingestion and organ content of trace elements of importance in radiological protection (RCA): 1995–2000
Regional hyperthermia combined with radiotherapy for locally advanced cancers: 1997–2002
Relationship between recurrent lower respiratory tract infection, gastro-esophageal reflux and bronchial asthma in children: 1999–2003
Significance of viral load and virus type in hepatitis B and C for pathogenesis and treatment efficacy: 1999–2002
Use of isotopic techniques to examine the significance of infection and other insults in early childhood to diarrhoea morbidity, mal-assimilation and failure to thrive: 1999–2003
Validation and application of plants as biomonitors of trace element atmospheric pollution, analysed by nuclear and related techniques: 1997–2002

Marine Environment, Water Resources and Industry

Application of isotope techniques to the assessment of aquifer systems in major urban areas: 1997–2000
Application of isotopes to the assessment of pollutant behaviour in the unsaturated zone for groundwater protection: 2000–2003
Development of agents for imaging central neural system receptors based on technetium-99m: 1995–2000
Development of kits for technetium-99m radiopharmaceuticals for infection imaging: 2000–2003
Development of radioactively labelled cancer seeking biomolecules for targeted radiotherapy: 1997–2001
Isotope response to dynamic changes in groundwater systems due to long term exploitation: 1997–2000
Isotope techniques for the assessment of slow moving deep groundwater and their potential application for the assessment of waste disposal sites: 1997–2000
Nuclear analytical techniques in archaeological investigations: 1996–2000
Radionuclide transport dynamics in freshwater resources: 1997–2000
Radiotracer technology for engineering unit operation studies and unit process optimization: 1998–2000
Sedimentation assessment studies by environmental radionuclides and their application to soil conservation measures: 1995–2000
Standardized high current solid targets for cyclotron production of diagnostic and therapeutic radionuclides: 2000–2003
Use of isotope techniques in investigating acidic fluids in geothermal exploitation: 1998–2001
Use of radiation processing for sterilization or decontamination of pharmaceuticals and pharmaceutical raw materials: 1999–2001
Use of tracers and stable isotopes in surface water pollution studies: 1997–2000
Validation of nuclear techniques for the analysis of precious and rare metals in mineral concentrates: 1997–2000
Validation of protocols for corrosion and deposit evaluation in pipes by radiography: 1997–2000

Physical and Chemical Sciences

Application of MeV ion beams for development and characterization of semiconductor materials: 1997–2000
Application of nuclear techniques to antipersonnel land mine identification: 1999–2002
Atomic and plasma-wall interaction data for fusion reactor divertor modelling: 1995–2000
Bulk hydrogen analysis using neutrons: 1997–2000
Charge exchange cross-section data for fusion plasma studies: 1997–2002
Development and applications of alpha particle spectrometry: 2002–2004
Development of agents for imaging central neural system receptors based on technetium-99m: 1995–2000
Development of a database for prompt gamma ray neutron activation analysis: 1999–2003
Development of computer based troubleshooting tools and instrument: 1996–2000
Development of kits for technetium-99m radiopharmaceuticals for infection imaging: 2000–2003

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Elements of power plant design for inertial fusion energy: 2000–2005
In situ applications of X ray fluorescence techniques: 2000–2004
Nuclear analytical techniques in archaeological investigations: 1996–2000
Nuclear model parameter testing for nuclear data evaluation (reference input parameter library: Phase II): 1998–2002
Update of X and gamma ray decay data standards for detector calibration: 1998–2002
Use of ion beam techniques for the analysis of light elements in thin films, including depth profiling: 2000–2003
Validation of nuclear techniques for the analysis of precious and rare metals in mineral concentrates: 1997–2000

**Nuclear Safety**

Development and application of indicators to monitor nuclear power plant operational safety performance: 1999–2003
Investigation of methodologies for incident analysis: 1997–2000
Round robin exercise on water cooled and moderated reactor pressure vessel (WWER-440) reactor pressure vessel weld metal irradiation embrittlement and annealing: 1996–2001
Safety of RBMK type nuclear power plants in relation to external events: 1997–2002

**Radiation Safety**

Accident severity during air transport of radioactive material: 1998–2001
Appropriate methods and procedures to apply probabilistic safety assessment techniques of large radiation sources: 2000–2003
Development of a radiological basis for the transport safety requirements for low specific activity materials and surface contaminated objects: 1997–2001
Image quality and patient dose optimization in mammography in eastern European countries: 1999–2003
Radioactive Waste Safety
Formulation of approaches to compare the potential impacts of wastes from electricity generation technologies: 1997–2000
Improvement of safety assessment methodologies for near surface disposal facilities for radioactive waste: 1997–2000
Use of selected safety indicators (concentrations; fluxes) in the assessment of radioactive waste disposal: 2000–2005