

HALF LIFE

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This is a work of fiction. All the characters portrayed in this book are fictional, and any resemblance to real people is purely coincidental. A few actual events from the operational history of the Rocky Flats Plant were selected and used as developmental concepts in the outline of this work, but the remainder are fictional.

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THIS BOOK WAS WRITTEN FOR MARIAN

NOTE TO THE READER:

The existence of a nuclear weapons facility bearing the name "Rocky Flats" is a fact. The plant is located some sixteen miles northwest of the central business section of Denver, Colorado, and its primary mission is processing plutonium into components for nuclear weapons.

The following are also facts of record: During its existence, there have been a number of fires at the Rocky Flats plant; some have been serious and a few have resulted in plutonium emissions to the atmosphere. Barrels containing plutonium contaminated oil were stored under the ground at Rocky Flats; some of those barrels corroded and leaked oil into the ground, and there were associated releases of radiation. Plutonium, traced to Rocky Flats, has been detected in the water supply of the City of Broomfield, Colorado, a northern suburb of Denver. At least one failure of the air filtration system at the plant, the system designed to filter plutonium contaminants, has been admitted by the government.

Studies have been done on the cost and feasibility of decommissioning the plant and/or relocating its radioactive materials work. Allegations have been made by reputable authorities that plutonium contamination from Rocky Flats is a health hazard to residents of the Denver area.

A fact which is of profound import to every creature on our planet is the development and deployment of nuclear weapons. It is wishful thinking to consider eliminating them, and global reductions, while being the only course of sanity, seem as elusive a hope as total eradication of nuclear knowledge.

It is also an unfortunate truth that one of the most contentious issues of the nuclear age centers around the biological effects of low levels of ionizing radiation. Military personnel exposed to above ground testing of nuclear weapons, civilians who lived downwind of the Nevada Test Site in the 1950's when most of the testing was conducted, nuclear facilities workers, and uranium miners have, for some years, been attempting to make the case that they have experienced and their children will experience adverse effects from exposure to low levels of radiation. In this difficult area, there are many questions, legal, ethical, and scientific, but there are few answers.

A further and related fact is the absolute presence in the world of radioactivity. Indeed, it is now, and has forever been, all around us. There is radiation in the earth, in the skies, and in our bodies - from "natural" sources. Aside from medical uses of radiation such as x-rays, the most significant "man-made" radiation is visited upon us by commercial and military activities. The mining, processing, and transportation of nuclear materials all contribute some radiation to our environment. The testing of weapons, the operation of commercial power reactors, and the storing and dumping of waste are constantly active and prolific sources of radiation.

This work does not presume to define or state a position on these issues which have been planted in our intellect by the nuclear age. The realities of radiation and nuclear weapons are merely the conditions of our existence which combine to constitute the factual predicate of this book. Each reader, if he finds the general subject, or any of its particulars, interesting, should pursue the matter as he will, but he should not rely on the material in this work as being in any way authoritative or instructive.

Proceeding from the facts set forth above, i.e. Rocky Flats and its problems, the presence of radiation and our lack of knowledge about the health effects of exposure to small amounts, and the increasing concern over world wide nuclear

weapons, this book has been constructed as a work of fiction. There has been no attempt to describe any individual, living or dead. Should there be any similarity between real persons and those created in this book, it is entirely the result of fictional coincidence. The description of the plant and its operations are fictional derivations based upon information set forth in a publicly available environmental impact statement prepared by the government. The scientific descriptions are fanciful and are not intended to be instructive, and the levels of radiation described in the novel, with a few exceptions, are not thought to bear any relationship to reality.

The purpose in writing this book has been solely to provide an item of thoughtful entertainment. If an incidental effect is to bring some needed attention to a troubled area, so much the better.

Thus HALF LIFE is a fictional display whose outline consists of a few uncomfortable facts selected from among the many which bring such great peril to our time. Yet, with both science and fiction, things are not always what they seem to be, and it is only there, along the margins of uncertainty where skepticism is welcome, that we shall find challenges worthy of our efforts. Therefore, it is for you, the reader, to determine if a segment of life in our time has been defined fairly and treated honestly enough to have challenged your imagination.

Few men realize that their life,
the very essence of their character,
their capabilities and their audacities,
are only the expression of their belief
in the safety of their surroundings.

Joseph Conrad

An Outpost of Progress

PLUTONIUM 239 IS A HEAVY, MAN-MADE, METALLIC ELEMENT WITH THE ATOMIC NUMBER 94. IT IS RADIOACTIVE AND DECAYS BY EMITTING ALPHA PARTICLES WHICH TRAVEL ONLY 25 TO 40 MICROMETERS IN TISSUE WITH LITTLE EFFECT ON THE SKIN. HOWEVER, THE EFFECTS OF PLUTONIUM IN THE LUNG OR IN THE BLOOD CAN BE PHYSICALLY DISASTROUS. INHALED, A FEW SMALL PARTICLES, MICROSCOPIC IN SIZE, CAN CAUSE DEATH BY MASSIVE FIBROSIS IN WEEKS OR EVEN DAYS. THEREFORE, PLUTONIUM MUST BE KEPT ISOLATED AND MUST BE HANDLED BY PERSONNEL WEARING GLOVES AND RESPIRATORS. BECAUSE PLUTONIUM IS PYROPHORIC, IT IS USUALLY PROCESSED IN AN INERT ATMOSPHERE. GIVEN THE CORRECT AMOUNT AND THE PROPER CONFIGURATION, PLUTONIUM CAN BE MADE TO EXPLODE IN WHAT IS COMMONLY CALLED A NUCLEAR DETONATION.

THE HALF LIFE OF PLUTONIUM 239 IS 24,360 YEARS. THAT IS THE PERIOD OF TIME REQUIRED FOR ONE HALF OF THE NUCLEI OF A GIVEN AMOUNT TO DECAY INTO SOMETHING OTHER THAN PLUTONIUM. HOWEVER, BY DECAY, PLUTONIUM BECOMES URANIUM 235 WHICH IS RADIOACTIVE AND HAS A HALF LIFE OF 713 MILLION YEARS

.MAN HAD TO WAIT APPROXIMATELY 1,942 YEARS AFTER THE BIRTH OF CHRIST FOR THE FIRST PLUTONIUM TO BE CREATED. HE SHALL HAVE TO WAIT ABOUT 12.5 LIKE PERIODS OF TIME FOR ONE HALF OF HIS FIRST BATCH OF PLUTONIUM TO TRANSFORM ITSELF INTO YET ANOTHER RADIOACTIVE ELEMENT. MOST PEOPLE WOULD AGREE - THAT IS A VERY LONG TIME - PERHAPS LONGER THAN THE HALF LIFE OF MAN HIMSELF

The Rocky Flats Plant is located in northern Jefferson County almost equidistant from the Colorado communities of Boulder, Golden, and Arvada. The facility is centered at Latitude 39 degrees 53 minutes N, Longitude 105 degrees 11 minutes W, which is about 16 miles northwest of downtown Denver. The Plant site encompasses about 6,550 acres of federally owned land with the major structures of the Plant located within a security-fenced area of 384 acres.

The Plant is a key facility, with unique processing capabilities, for the production of nuclear weapons components and other work directly related to national defense.