Nuclear Regulatory Commission § 36.29

each entrance to the area within the personnel access barrier of an under-
water irradiator must be posted as re-
quired by 10 CFR 20.1902. Radiation post-
gings for panoramic irradiators must comply with the posting require-
ments of 10 CFR 20.1902, except that
signs may be removed, covered, or oth-
nerwise made inoperative when the
sources are fully shielded.

(h) If the radiation room of a pano-
ramic irradiator has roof plugs or other
movable shielding, it must not be pos-
sible to operate the irradiator unless
the shielding is in its proper location.
This requirement may be met by inter-
locks that prevent operation if shield-
ing is not placed properly or by an op-
erating procedure requiring inspection
of shielding before operating.

(i) Underwater irradiators must have
a personnel access barrier around the
pool which must be locked to prevent
access when the irradiator is not at-
tended. Only operators and facility
management may have access to keys
to the personnel access barrier. There
must be an intrusion alarm to detect
unauthorized entry when the personnel
access barrier is locked. Activation of
the intrusion alarm must alert an indi-
vidual (not necessarily onsite) who is
prepared to respond or summon assis-
tance.

§ 36.25 Shielding.

(a) The radiation dose rate in areas
that are normally occupied during op-
eration of a panoramic irradiator may
not exceed 0.02 millisievert (2 millirems)
per hour at any location 30 cen-
timeters or more from the wall of
the room when the sources are exposed.
The dose rate must be averaged over an
area not to exceed 100 square centi-
meters having no linear dimension
greater than 20 cm. Areas where the ra-
diation dose rate exceeds 0.02
millisievert (2 millirems) per hour
must be locked, roped off, or posted.

(b) The radiation dose at 30 cen-
timeters over the edge of the pool of a
pool irradiator may not exceed 0.02
millisievert (2 millirems) per hour
when the sources are in the fully
shielded position.

(c) The radiation dose rate at 1 meter
from the shield of a dry-source-storage
panoramic irradiator when the source
is shielded may not exceed 0.02
millisievert (2 millirems) per hour and
at 5 centimeters from the shield may
not exceed 0.2 millisievert (20
millirems) per hour.

§ 36.27 Fire protection.

(a) The radiation room at a pano-
ramic irradiator must have heat and
smoke detectors. The detectors must
activate an audible alarm. The alarm
must be capable of alerting a person
who is prepared to summon assistance
promptly. The sources must auto-
matically become fully shielded if a fire
is detected.

(b) The radiation room at a pano-
ramic irradiator must be equipped with
a fire extinguishing system capable of
extinguishing a fire without the entry
of personnel into the room. The system
for the radiation room must have a
shut-off valve to control flooding into
unrestricted areas.

§ 36.29 Radiation monitors.

(a) Irradiators with automatic prod-
uct conveyor systems must have a ra-
diation monitor with an audible alarm
located to detect loose radioactive
sources that are carried toward the
product exit. If the monitor detects a
source, an alarm must sound and prod-
uct conveyors must stop automati-
cally. The alarm must be capable of
alerting an individual in the facility
who is prepared to summon assistance.
Underwater irradiators in which the
product moves within an enclosed sta-
tionary tube are exempt from the re-
quirements of this paragraph.

(b) Underwater irradiators that are
not in a shielded radiation room must
have a radiation monitor over the pool
to detect abnormal radiation levels.
The monitor must have an audible
alarm and a visible indicator at en-
trances to the personnel access barrier
around the pool. The audible alarm
may have a manual shut-off. The alarm
must be capable of alerting an indi-
vidual who is prepared to respond
promptly.

727