We claim:

1. A method for setting up an infusion system, the method comprising:

opening a first door of a shielding assembly of the infusion system to access a first compartment of the assembly and to allow for a second door of the shielding assembly to be opened, wherein the first door defines a first door edge, the second door defines a second door edge, and the first door edge overlaps the second door edge so as to prevent the second door from being opened if the first door is not open; and

opening the second door, after opening the first door, to access a second compartment of the shielding assembly, the second compartment being separate from, and outside of, the first compartment;

placing a radioisotope generator into the second compartment and connecting the generator to an infusion tubing circuit;

placing a portion of the infusion tubing circuit into the first compartment;

closing the second door to enclose the generator within the second compartment; and

closing the first door, after closing the second door, to enclose the portion of the infusion tubing circuit within the first compartment.

2. The method of claim 1, further comprising unlocking and removing an access panel from a shell of a cabinet structure, which encloses the shielding assembly, to access the first door and the second door of the shielding assembly.

3. The method of claim 1, further comprising:

opening a third door, prior to opening the first door, to access a third compartment of the shielding assembly and to allow for the first door to be opened;

placing another portion of the infusion tubing circuit into the third compartment; and

closing the third door, after closing the first door, to enclose the other portion of the infusion tubing circuit within the third compartment.

4. The method of claim 3, further comprising unlocking and removing an access panel from a shell of a cabinet structure, which encloses the shielding assembly, to access the first door, the second door and the third door of the shielding assembly.

5. The method of claim 3, further comprising:

opening a fourth door, prior to opening the third door, to access a fourth compartment of the shielding assembly and to allow for the third door to be opened;

connecting a waste line of the infusion tubing circuit to a waste bottle;

placing the waste bottle into the fourth compartment; and

closing the fourth door, after closing the third door, to enclose the waste bottle within the fourth compartment.

6. The method of ~~any of~~ claims ~~1-5~~, further comprising securing at least one of the first and second doors in an open position.

7. A shielding assembly ~~(200)~~ for an infusion system ~~(10) that generates and infuses radiopharmaceuticals~~, the shielding assembly comprising a plurality of~~first~~ compartments and ~~a second compartment, the first compartment being enclosed by a first sidewall (201) of the shielding assembly and the second compartment being enclosed by a second sidewall (205) of the shielding assembly, each of the first and second sidewalls~~ providing a radioactive radiation barrier for the ~~corresponding~~ compartments, the assembly further comprising:

~~and each including a door (221, 225),~~ a first ~~of the~~ doors ~~(221)~~ to alternately enclose and provide access to a~~the~~ first compartment of the plurality of compartments, the first compartment sized to contain a radioisotope generator of the infusion system; and

a second ~~of the~~ doors ~~(225)~~ to alternately enclose and provide access to a~~the~~ second compartment of the plurality of compartments, ~~; and the shielding assembly being characterized in that:~~

~~the first compartment is sized to contain one or more radioisotope generators (21) of the system;~~

the second compartment beingis separate from, and outside of, the first compartment, the second compartment being ~~located adjacent thereto, and is~~ sized to contain a portion of an infusion tubing circuit ~~(300)~~ of the infusion system that is downstream of the ~~one or more~~ generators~~; and~~

~~the second door is configured such that~~, when ~~the second door~~ enclosinges the second compartment, ~~the second door~~ preventings the first door from opening to provide access to the first compartment,

wherein the first door defines a first door edge, the second door defines a second door edge, and the first door edge overlaps the second door edge so as to prevent the first door from being opened if the second door is not open.

8. The shielding assembly of claim 7, further comprising~~characterized in that:~~

~~the shielding assembly further comprises a third compartment being enclosed by a third sidewall (203) of the shielding assembly, the third sidewall providing a radioactive radiation barrier for the third compartment and including~~ a third door ~~(227)~~ to alternately enclose and provide access to a~~the~~ third compartment of the plurality of compartments, ;

the third compartment ~~is~~ sized to contain another portion of the infusion tubing circuit of the infusion system ~~that is~~ downstream from the ~~one or more~~ generators,~~; and~~

the third door ~~is configured such that~~, when enclosing the third compartment, ~~the third door~~ preventings the second door from opening to provide access to the second compartment.

9. The shielding assembly of claim 8, further comprising~~characterized in that:~~

~~the shielding assembly further comprises a fourth compartment being enclosed by the third sidewall, the third sidewall providing a radioactive radiation barrier for the fourth compartment and including~~ a fourth door ~~(223)~~ to

alternately enclose and provide access to a~~the~~ fourth compartment of the plurality of compartments,~~;~~

the fourth compartment being~~is~~ sized to contain a waste bottle ~~(23)~~ of the infusion system,~~;~~ ~~and~~

the fourth door ~~is configured such that~~, when enclosing the fourth compartment, ~~the fourth door~~ prevent~~ings~~ the third door from opening to provide access to the third compartment.

10. The shielding assembly of claim 9, wherein~~further characterized in that~~ the third compartment shares a sidewall with the fourth compartment and extends approximately vertically along the shared~~third~~ sidewall~~, on an opposite side of the third sidewall from the fourth compartment~~.

11. The shielding assembly of claim 10, wherein~~further characterized in that~~ the third compartment includes a retaining member attached to the shared sidewall~~(237)~~ to hold the other portion of the infusion tubing circuit in place along~~within~~ the shared sidewall~~third compartment~~.

12. An infusion system ~~(10) that generates and infuses radiopharmaceuticals, the system~~ comprising:

a cabinet structure~~, a shielding assembly (200) and an infusion circuit (300); the cabinet structure~~ including a shell ~~(13) and a framework (19), the shell~~ defining an interior space thereof, ~~in which the shielding assembly is mounted, and~~ the shell including a first opening ~~(135), and~~ a second opening and an access panel, the access panel mating with the second opening and being removable therefrom~~(137)~~;

a lock reversibly engaging the access panel to secure access to the interior space of the cabinet structure;

~~the infusion circuit including~~ an eluant source ~~(15, 33),~~;

a shielding assembly located within the interior space of the cabinet structure, the shielding assembly including a sidewall defining a plurality of compartments and providing a barrier to radioactive radiation for the

compartments, the shielding assembly further including a corresponding plurality of doors, each door, when open, providing access to the corresponding compartment via an opening in the sidewall, and, when closed, providing further barrier to radioactive radiation for the corresponding compartment;

a~~one or more~~ radioisotope generators contained within a first compartment of the plurality of compartments of the shielding assembly and being accessible through the second opening of the shell of the cabinet structure, when the access panel is unlocked, and when a first door of the plurality of doors, which corresponds to the first compartment, is open~~(21),~~;

an eluant line ~~(302, 304)~~ coupled to the eluant source and to the ~~one or more~~ generators~~,~~;

an eluate line ~~(305)~~ coupled to the ~~one or more~~ generators~~,~~; and

a patient line ~~(305p)~~ coupled to the eluate line and extending out from the interior space of the cabinet structure~~,~~ through the first opening of the shell~~; and the system being characterized in that:~~

~~the shell of the cabinet structure includes an access panel (132) that mates with the second opening of the shell, being removable therefrom, the access panel including a lock (138) that mates with the framework of the cabinet structure in order to secure access to the interior space; and~~

~~the shielding assembly includes a first sidewall (201) that defines a first compartment in which the one or more radioisotope generators is contained, the first sidewall providing a barrier to radioactive radiation for the first compartment and including an opening (231) and a first door (221) that mates with the opening, the first door being accessible through the second opening of the shell, when the access panel is unlocked, and, when open, the first door providing access to the one or more generators contained in the first compartment, via the opening in the sidewall~~.

13. The assembly~~system~~ of claim 12, wherein~~further characterized in that:~~

the first door ~~of the first sidewall of the shielding assembly~~ is hinged to open in an upward direction; and

~~the cabinet structure~~ further comprising~~includes~~ a latch component ~~(191)~~, ~~the latch component being~~ mounted within~~to the framework of~~ the cabinet structure, to hold the first door in an open position.

14. The system of claim 12, ~~wherein the infusion circuit~~ further comprising:~~includes~~

a waste bottle contained within a second compartment of the plurality of compartments of the shielding assembly~~(23)~~; and

a waste line ~~(305w)~~ coupled to the eluate line and to the waste bottle; ~~and further characterized in that:~~

~~the shielding assembly further includes a second sidewall (203) that defines a second compartment in which the waste bottle is contained, the second sidewall providing a barrier to radioactive radiation for the second compartment and including an opening (233) and a second door (223) that mates with the opening; and~~

wherein the shell of the cabinet structure further includes a third opening ~~(139)~~; and

a~~the~~ second door of the plurality~~second sidewall~~ of doors, which corresponds to the second compartment,~~the shielding assembly~~ is aligned with the third opening of the shell, for access thereto ~~the waste bottle contained within the second compartment, when the second door is open~~, and is located at a higher elevation, with respect to a lowermost surface of the cabinet structure, than that of the second~~first~~ door ~~of the first sidewall of the shielding assembly~~.

15. The system of claim 12, ~~wherein the infusion circuit~~ further comprising~~includes~~

a waste bottle contained within a second compartment of the plurality of compartments of the shielding assembly;~~(23)~~ and

a waste line ~~(305w)~~ coupled to the eluate line and to the waste bottle; ~~and further characterized in that:~~

~~the shielding assembly further includes a second sidewall (203) that defines a second compartment in which the waste bottle is contained, the second sidewall providing a barrier to radioactive radiation for the second~~

~~compartment and including an opening (233) and a second door (223) that mates with the opening; and~~

wherein a~~the~~ second door of the plurality of doors, which corresponds to the second compartment~~second sidewall of the shielding assembly~~, when closed, prevents the first door ~~of the first sidewall of the shielding assembly~~ from opening to provide access to ~~the one or more generators contained in~~ the first compartment.

16. The system of claim 12, wherein~~further characterized in that~~:

~~the shielding assembly further includes a second sidewall (205) that defines a second compartment in which~~ the eluate line and at least a portion of the patient line are contained~~,~~ in a~~the second sidewall providing a barrier to radioactive radiation for the~~ second compartment of the plurality of compartments of the shielding assembly~~and including an opening (235) and a second door (225) that mates with the opening~~; and

a~~the~~ second door of the plurality of doors, which corresponds to the second compartment~~second sidewall of the shielding assembly~~, when closed, prevents the first door ~~of the first sidewall of the shielding assembly~~ from opening to provide access to ~~the one or more generators contained in~~ the first compartment.

17. The system of claim 16, wherein~~further characterized in that~~ the second door ~~of the second sidewall of the shielding assembly~~ is accessible only through the second opening of the shell of the cabinet structure, when the access panel is unlocked.

18. The system of claim 16, wherein~~further characterized in that:~~

the first door and the second door ~~of the first and second sidewalls of the shielding assembly~~ are both hinged to open in an upward direction; and

~~the cabinet structure~~ further comprising~~includes~~ at least one latch component ~~(191)~~, ~~the at least one latch component being~~ mounted within~~to the framework of~~ the cabinet structure, to hold the first door and the second door in an open position.