A multi-purpose protective garment that comprises a jacket and a pair of pants. Both the jacket and the pair of pants comprise an inner module and an outer module. The inner module is suitable for being worn both separately, and in combination with the outer module. The inner module forms a first protective garment compliant with the NFPA 1999 Standard on Protective Clothing for Emergency Medical Operations and the NFPA 1951 Standard on Protective Ensemble for USAR (Urban Search and Rescue) Operations. The inner module in combination with the outer module forms a second protective garment compliant with the NFPA 1971 Standard on Protective Ensemble for Structural Fire Fighting.
MULTI-PURPOSE PROTECTIVE GARMENT

FIELD OF THE INVENTION

[0001] The present invention relates to the field of protective garments. More specifically, the present invention relates to multi-purpose modular protective garments that include a jacket and a pair of pants that each have an inner module and an outer module.

BACKGROUND OF THE INVENTION

[0002] The role of emergency responders, and particularly fire fighters, has increased over the past few years. In addition to the traditional job of fighting fires, many fire fighters have now become the first responders to many emergency situations. For example, some fire fighters are now expected to respond to emergency situations ranging from multi-vehicle car accidents, to bio-hazard threats. Due to this increase in responsibilities, many fire fighters are being cross-trained to respond to emergency medical situations and search & rescue activities, in addition to the traditional fire fighting activities.

[0003] Obviously, fire fighters and other emergency first responders are required to wear protective garments in order to protect them from the different environmental conditions to which they are exposed. The National Fire Protection Association (NFPA) is a recognized organization for establishing safety standards. The NFPA has established different standards for different activities. For example, protective garments that are suitable for emergency medical situations, search and rescue activities and structural fire fighting will each be required to meet different NFPA standards. In other words, depending on the main activity for which the protective garment is designed, the protective garment will be required to meet a different NFPA standard.

[0004] Unfortunately, many fire fighters who perform both structural fire fighting, and emergency medical response and/or search and rescue activities, are provided with only one protective garment. As such, this protective garment is generally in compliance with the standards for structural fire fighting.

[0005] For many tasks, such as search and rescue activities and emergency medical response activities, a protective garment that meets the standards for structural fire-fighting provides far more thermal protection than the wearer needs. This makes the protective garment quite heavy, and quite hot for a fire fighter to wear when responding to an emergency medical response situation or a search and rescue situation. As such, the fire fighter will be uncomfortable, and unable to work at maximum efficiency.

[0006] In light of this situation, it is commonly observed that fire fighters who respond to emergency medical situations wearing protective garments that are too cumbersome for the task at hand, often undo the front closure of their protective garment, or remove their protective garment altogether. Given that the scenes of many emergency medical and/or rescue situations can be quite dangerous with sharp objects, blood and glass strewn about the scene, a fire fighter that undoes the closure of his/her jacket, or removes the jacket altogether, puts him/herself at risk of getting hurt or contaminated. Obviously, this defeats the entire purpose of the protective garment altogether.

SUMMARY OF THE INVENTION

[0007] In light of the above, it can be seen that there is a need in the industry for a protective garment that alleviates, at least in part, the deficiencies of the prior art, and provides a wearer with sufficient protection for many different types of situations.

[0008] In accordance with a first broad aspect, the present invention provides a protective garment that comprises a jacket and a pair of pants. The jacket has a jacket inner module and a jacket outer module and the pair of pants has a pant inner module and a pant outer module. The jacket inner module and the pant inner module each comprise an inner layer of moisture barrier material and an outer layer of abrasion resistant material. In addition, the jacket outer module and the pant outer module each comprise an inside layer of thermal insulation material and an outside layer of abrasion resistant material. The jacket inner module and the pant inner module form a protective garment of a first type, and the combination of the jacket inner module and the pant inner module with the jacket outer module and the pant outer module form a protective garment of a second type.

[0009] In accordance with a second broad aspect, the present invention provides a protective pair of pants that comprises an inner module and an outer module. The inner module comprises an inner layer of moisture barrier material and an outer layer of abrasion resistant material. The outer module comprises an inside layer of thermal insulation material and an outside layer of abrasion resistant material.

[0010] In accordance with another broad aspect, the present invention provides a multi-purpose protective garment that comprises an inner module and an outer module. The inner module is suitable for being worn separately and in combination with the outer module. The inner module forms a first protective garment that is compliant with the NFPA 1999. Standard on Protective Clothing for Emergency Medical Operations and the NFPA 1951. Standard on Protective Ensemble for USAR (Urban Search and Rescue) Operations. The inner module in combination with the outer module forms a second protective garment that is compliant with the NFPA 1971. Standard on Protective Ensemble for Structural Fire Fighting.

[0011] These and other aspects and features of the present invention will now become apparent to those of ordinary skill in the art upon review of the following description of specific embodiments of the invention and the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] In the accompanying drawings:

[0013] FIG. 1 shows an exploded view of a protective garment in accordance with a non-limiting example of implementation of the present invention

[0014] FIG. 2A shows a front plan view of the jacket inner module of the protective garment shown in FIG. 1 with the front opening closed;

[0015] FIG. 2B shows a front plan view of the jacket inner module of the protective garment shown in FIG. 1 with the front opening open;
FIG. 3A shows a front plan view of the pants inner module of the protective garment shown in FIG. 1;

FIG. 3B shows a rear plan view of the pants inner module of the protective garment shown in FIG. 1;

FIG. 4 shows an expanded view of the pelvic region of the pants inner module of the protective garment shown in FIG. 1;

FIG. 5 shows a view of the layers of the inner module of the protective garment in accordance with a non-limiting example of implementation of the present invention;

FIG. 6A shows a front plan view of the jacket outer module of the protective garment shown in FIG. 1 with the front opening closed;

FIG. 6B shows a front plan view of the jacket outer module of the protective garment shown in FIG. 1 with the front opening open;

FIG. 7A shows a front plan view of the pants outer module of the protective garment shown in FIG. 1;

FIG. 7B shows a rear plan view of the pants outer module of the protective garment shown in FIG. 1;

FIG. 8 shows an expanded view of the pelvic regions of the pants outer module of the protective garment shown in FIG. 1;

FIG. 9 shows a view of the layers of the outer module of the protective garment in accordance with a non-limiting example of implementation of the present invention.

FIG. 10 shows an expanded view of the front opening of the jacket of the protective garment shown in FIG. 1;

FIG. 11 shows a front plan view of the protective garment of FIG. 1 shown in an assembled state;

FIG. 12 shows an exploded view of a protective garment in accordance with an alternative non-limiting example of implementation of the present invention.

Other aspects and features of the present invention will become apparent to those ordinarily skilled in the art upon review of the following description of specific embodiments of the invention in conjunction with the accompanying figures.

DETAILED DESCRIPTION

Shown in FIG. 1 is an exploded view of a multipurpose modular protective garment 10 in accordance with a non-limiting example of implementation of the present invention. The protective garment 10 is suitable for being worn by emergency responders, and particularly fire fighters.

The protective garment 10 includes a jacket 12 and a pair of pants 14. The jacket 12 includes a jacket inner module 16 and a jacket outer module 18, and the pair of pants 14 includes a pants inner module 20 and a pants outer module 22. As will be described in more detail below, the jacket inner module 16 and the pants inner module 20 are adapted for being worn separately, as well as in combination with the jacket outer module 18 and the pants outer module 22.

The Inner Module

Shown in FIGS. 2A and 2B is the jacket inner module 16. The jacket inner module 16 includes a torso covering portion 24, two sleeves 26, a head opening 28, a lower trunk opening 30 and a frontal opening 32 that extends from the head opening 28 to the lower trunk opening 30. The frontal opening 32 enables a wearer to don and un-don the jacket inner module 16.

In FIG. 2A, the jacket inner module 16 is shown with the frontal opening 32 in the closed position, and in FIG. 2B, the jacket inner module 16 is shown with the frontal opening 32 in the open position. The frontal opening 32 divides the front of the jacket inner module 16 into a first side 40A and a second side 40B. In the non-limiting embodiment shown in FIG. 2B, the frontal opening 32 is closable via multiple different fastening arrangements. More specifically, the different fastening arrangements include snaps 34, a hook and loop arrangement 36, and a zipper 38. The snaps 34 include a first portion 34A on the outer surface of the first side 40A and a second portion 34B located on the inner surface of the second side 40B. Likewise, the hook and loop arrangement 36 includes a first portion 36A on the outer surface of the first side 40A and a second portion 36B on the inner surface of the second side 40B. As such, when the first portions 34A, 36A and 38A and the second portions 34B, 36B and 38B of the respective fastening arrangements are joined together, they are operative to keep the frontal opening 32 of the inner module 16 closed. It should be understood that in an alternative embodiment, more or less fastening arrangements can be included on the inner module 16 without departing from the spirit of the invention.

As shown in FIG. 2B, when the frontal opening 32 is closed, a portion of the second side 40B of the jacket inner module 16 overlaps a portion of the first side 40A. As such, in a non-limiting embodiment, the inner module 16 further includes magnets 42 on each of the first side 40A and the second side 40B that are able to join together when the first side 40A and the second side 40B of the jacket overlap. The magnets keep the overlapping portion of the second side 40B of the jacket inner module 16 in place, which helps to protect the zipper 38. In this manner, debris and/or foreign fluids that splash onto the wearer are prevented from entering the frontal opening 32 of the inner module 16.

In a non-limiting embodiment of the present invention, the magnets 42 can be positioned directly on the material of the outer surface of the first side 40A and the inner surface of the second side 40B, or alternatively the magnets 42 can be positioned between different layers of material that make up the inner module 16. In this embodiment, the magnets 42 would not be visible from the outside. The different layers of the inner module 16 will be described in more detail below.

In the non-limiting embodiment shown in FIGS. 2A and 2B, the jacket inner module 16 further includes a breast pocket 33, for receiving a walkie-talkie or some other
communication device, as well as two lower pockets 35. It should be appreciated that each of these components is optional.

[0038] Shown in FIGS. 3A and 3B is the pants inner module 20. FIG. 3A shows a front view of the pants inner module 20 and FIG. 3B shows a rear view of the pants inner module 20. The pants inner module 20 includes two legs 46 and a pelvic covering portion 48 that includes a front opening 50. The front opening 50 is operable for enabling the wearer to don and undon the pants inner module 20. In the non-limiting embodiment shown, the pants inner module 20 further includes a pair of suspenders 52, knee reinforcements 54, and flexible bands 56 around the lower leg portions. It should be appreciated that each of these components is optional.

[0039] In addition, the legs 46 include zippers 55 at the lower leg portions. In the non-limiting embodiment shown, the zippers 55 extend from the bottom of the legs 57 to just above the knee reinforcements 54. The zippers 55 enable the wearer to more easily put on his/her protective boots so as to be able to quickly don and doff the pant outer module.

[0040] Shown in FIG. 4 is an expanded view of the pelvis covering portion 48 of the pants inner module 20. As shown, the front opening 50 includes a zipper 55 and a popper 58 for closing the front opening 50. Pains constructions having this type of opening are known in the art and, as such will not be described in more detail herein. Other manners of closing the front opening 50 are also included within the scope of the present invention.

[0041] In accordance with the present invention, each of the jacket inner module 16 and the pants inner module 20 comprises at least two layers of material. More specifically, as shown in FIG. 5, each of the jacket inner module 16 and the pants inner module 20 comprises an inner layer 60 of moisture barrier material and an outer layer 62 of abrasion resistant material.

[0042] The inner layer 60 is operable for providing liquid tight integrity, both from the elements and from chemical and viral hazards. The inner layer 60 is operable for being impermeable to water, NFPA defined common chemicals and to blood and body fluid borne pathogens. In addition, while preventing foreign liquid from entering the inner modules 16 and 20, the inner layer 60 allows water vapour built up by the perspiration of the wearer to escape. In this manner the wearer is prevented from overheating. In a non-limiting example of implementation, the inner layer 60 includes a fabric inner liner, such as a lightweight facelock/terrycloth quilted to a batting or felt, that is laminated to an ePTFE moisture membrane. A non-limiting example of an ePTFE moisture membrane is CROSSTEC®R, developed by W.L. Gore.

[0043] As mentioned above, the outer layer 62 of the inner modules 16 and 20 is an abrasion resistant material that is operable for providing cut, tear and puncture resistance. In a further embodiment, the outer layer 62 is also water and flame resistant. An example of a material suitable for the outer layer 62 is a lightweight woven aramid fabric, such as Nomex®, a Nomex®/Kevlar® blend, a PBI®/Kevlar® blend or Millenias®. Other materials known in the art that provide abrasion resistance are also included within the scope of the present invention.

[0044] In the non-limiting example of implementation shown in FIG. 5, a pocket of air 64 is trapped between the inner layer 60 and the outer layer 62 of materials. This pocket of air 64 provides some thermal insulation to the inner modules 16 and 20.

[0045] As mentioned above, the jacket inner module 16 and the pants inner module 20 are operable to be worn separately from the outer modules 18 and 22. When the jacket inner module 16 and the pants inner module 20 are worn without the outer modules 18 and 22, the inner layer 60 of moisture barrier material, and the outer layer 62 of abrasion resistant material provide a protective garment that is suitable for emergency medical response situations, such as car accidents, as well as emergency search and rescue activities. More specifically, the jacket inner module 16 and the pants inner module 20 as described above, provide a protective garment that is in compliance with the NFPA 1999 Standard on Protective Clothing for Emergency Medical Operations, and the Standard on Protective Ensemble for USAR (Urban Search and Rescue) Operations.

[0046] The Outer Module

[0047] The jacket outer module 18 and the pants outer module 22 will now be described in more detail with respect to FIGS. 6A, 6B, 7A and 7B respectively.

[0048] Shown in FIGS. 6A and 6B is the jacket outer module 18. Similarly to the jacket inner module 16, the jacket outer module 18 includes a torso covering portion 66, two sleeves 68, a head opening 70, a lower trunk opening 72 and a front opening 74 that extends from the head opening 70 to the lower trunk opening 72. The front opening 74 enables a wearer to don and undon the jacket outer module 18.

[0049] In FIG. 6A the jacket outer module 18 is shown with the front opening 74 in the closed position, and in FIG. 6B the jacket outer module 18 is shown with the front opening 74 in the open position. The front opening 74 divides the front of the jacket outer module 18 into a first side 80A and a second side 80B.

[0050] In the non-limiting embodiment shown in FIG. 6B, the front opening 74 is closable via two different fastening arrangements. More specifically, the fastening arrangements include a hook and loop arrangement 76, and a first zipper 78. The hook and loop arrangement 76 includes a first portion 76A on the outer surface of the first side 80A, and a second portion 76B on the inner surface of the second side 80B. In addition, the first zipper 78 includes a first portion 78A on the outer surface of the first side 80A, and a second portion 78B on the inner surface of the second side 80B. As such, when the first portions 76A and 78A and the second portions 76B and 78B of the respective fastening arrangements are joined together, they are operable to keep the front opening 74 closed. It should be understood that in an alternative embodiment, more or less fastening arrangements can be included on the outer module 18 without departing from the spirit of the invention.

[0051] In the non-limiting embodiment shown in FIGS. 6A and 6B, when the frontal opening 74 is closed, a portion of the second side 80B of the jacket outer module 18 overlaps a portion of the first side 80A of the jacket outer module 18. As such, the outer module 18 further includes magnets 84 on each of the first side 80A and the second side
that are able to join together when the first side 80A and the second side 80B overlap. In a non-limiting embodiment, the magnets 84 are located near the head opening 70 for keeping the extended collar 86 closed. The magnets 84 are thereby operative to keep the overlapping portion of the second side 80B in place, and to help protect the first zipper 78. In this manner, debris and/or foreign fluids are prevented from entering the frontal opening 74 of the outer module 18.

In addition to the first zipper 78, the jacket outer module includes a second zipper 82. The second zip 82 includes a first zipper portion 82A and a second zipper portion 82B. The first zipper portion 82A is located on the edge of the front opening 74 on the first side 80A of the jacket 18 and the second zipper portion 82B is located on the inner surface of the second side 80B. As will be described in more detail below, the second zipper 82 is operative for connecting the jacket inner module 16 to the jacket outer module 18.

Shown in FIGS. 7A and 7B is the pants outer module 22. FIG. 7A shows a front view of the pants outer module 22 and FIG. 7B shows a rear view of the pants outer module 22. The pants outer module 22 includes two legs 90 and a pelvic covering portion 92 that includes a front opening 94, such that the wearer can don and un-don the pants outer module 22. In the non-limiting embodiment shown, the pants outer module 22 includes hooks 98, knee reinforcements 96 and florescent bands 102 around the lower leg portions. It should be appreciated that each of these components is optional. The hooks 98 are operable align the inner pant module with the outer pant module.

Shown in FIG. 8 is an expanded view of the pelvic covering portion 92 of the pants outer module 22. As shown, the pants outer module 22 includes a hook and loop arrangement 95 for fastening the front opening 94, and a hook and fastener 100 that comprises a hook portion 100A and a fastener portion 100B. Such hook and fastener 100 are known in the art, and as such will not be described in more detail herein.

The pants outer module 22 further comprises a first longitudinal opening 106A along a first outer leg portion and a second longitudinal opening 106B along a second outer leg portion. In accordance with a non-limiting embodiment of the present invention, the first longitudinal opening 106A and the second longitudinal opening 106B are each closable via a zipper (not shown). It should however be appreciated that other fastening devices, such as poppers, or a hook and loop arrangement could also be used without departing from the spirit of the invention.

Due to the presence of the first and second longitudinal openings 106A and 106B, instead of having to remove the pants outer module 22 by opening the front opening 74, the pants outer module 100 can be removed by opening the first and second longitudinal openings 106A and 106B. In this manner, in the case where the wearer needs to quickly remove the pants outer module 22, such as in the case where the extra protection from the pants outer module 22 is not needed, the wearer can simply use the first and second longitudinal openings 106A and 106B to quickly remove the pants outer module 22.

Each of the jacket outer module 18 and the pants outer module 22 comprise at least two layers of material.

Shown in FIG. 9 is a non-limiting example of the layers of material that make up the outer modules 18 and 22. As shown, each of the outer modules 18 and 22 comprises an inside layer 110 of thermal insulation material and an outside layer 112 of abrasion resistant material.

The inside layer 110 is operative for providing thermal insulation from the harsh environmental conditions to which the emergency workers might be faced, such as the heat from a fire, for example. A non-limiting example of a type of material that is suitable for the inside layer 110 is a mesh fabric, such as a Nomex® mesh fabric.

The outside layer 112 of the outer modules 18 and 22 is an abrasion resistant material that is operative for providing cut, tear, and puncture resistance, as well as water and flame resistance. In a non-limiting example of implementation, the outside layer 112 can be made of a tightly woven aramid fabric, such as Nomex®, a Nomex®/Kevlar® blend, a PBI®/Kevlar® blend or Millenia®.

As mentioned above, the outer modules 18 and 22 of the protective garment 10 are operative to be worn in combination with the inner modules 16 and 20. When worn together, the outer modules 18 and 22 together with the inner modules 16 and 20 provide a protective garment that is in compliance with the NFPA 1971 standard for structural fire fighting. In other words, the additional thermal insulation properties provided by the outer modules 18 and 22 boost the properties of the inner modules 16 and 20, such that the combination of the inner and outer modules provides a protective garment that meets more rigorous standards.

In a further non-limiting embodiment, the combination of the inner modules 16 and 20, together with the outer modules 18 and 22 provides a protective garment that would provide protection against chemical, biological and nuclear hazards.

The Inner Module Together with the Outer Module

Shown in FIG. 10 is the jacket inner module 16 connected to the jacket outer module 18. In order to connect the jacket inner module 16 to the jacket outer module 18, the zip portion 38A of the jacket inner module 16 is connected to the zip portion 82A of the jacket outer module 18, and the zip portion 38B of the jacket inner module 16 is connected to the zip portion 82B of the jacket outer module 22. As such, the zip 38 of the jacket inner module 16 has the dual purpose of being able to close the frontal opening 32 of the jacket inner module 16, as well as being able to connect the jacket inner module 16 to the jacket outer module 18.

When the jacket inner module 16 is connected to the jacket outer module 18, the combination of the frontal opening 32 of the inner module 16 and the frontal opening 74 of the outer module 18 provides a frontal opening 114. In the embodiment shown in FIG. 10, the frontal opening 114 can be closed via three fastening arrangements, namely the hook and loop arrangement 36 of the inner module 16 and the hook and loop arrangement 76 and the zipper 78 of the outer module 18.

In the non-limiting embodiment shown in FIG. 10, the hooks 36A of the hook and loop arrangement 36 of the inner module 16 are on the opposite side of the frontal opening 114 from the hooks 763 of the hook and loop arrangement 76 of the outer module 18. Likewise, the loops
36B of the hook and loop arrangement 36 of the inner module 16 are on the opposite side of the frontal opening 114 from the loops 76A of the hook and loop arrangement 76 of the outer module 18. In this manner, the hook and loop arrangement 36 of the inner module 16 cannot connect with the hook and loop arrangement 76 of the outer module 18 which would cause a misalignment of the fastening arrangements. An advantage of connecting the jacket inner module 16 to the jacket outer module 18 is that the combination of the two jacket modules can be donned and un-donne by the wearer in one step, as opposed to the two steps of firstly putting on the inner module 16, and then secondly putting on the outer module 18 over the inner module 16.

[0066] Shown in FIG. 11 is the multi-purpose protective garment 10 shown in the assembled state, wherein the jacket inner module 16 and the jacket outer module 18 are assembled together to form the overall jacket 12, and the pants outer module 22 is worn over the pants inner module 20 to form the overall pants 14. As mentioned above, the inner modules 16 and 20 can be worn separately in order to form a protective garment of a first type, such as a protective garment that is in accordance with one or both of the NFPA 1994, Standard on Protective Clothing for Emergency Medical Operations, and the Standard on Protective Ensemble for USAR (Urban Search and Rescue) Operations. However, the inner modules 16 and 20 can also be worn in combination with the outer modules 18 and 22, as shown in FIG. 11, in order to form a protective garment of a second type, such as a protective garment that is in accordance with the NFPA 1971, Standard on Protective Ensemble for Structural Fire Fighting.

[0067] In a further non-limiting embodiment, the second type of protective garment is also in compliance with the NFPA 1994, Standard on Protective Ensembles for Chemical/Biological Terrorism Incidents. In order to meet this NFPA 1994 standard, the protective garment would include additional protective fabrics and specialised closure systems that are known in the art. As such, these additional protection components will now be described in more detail herein.

[0068] As such, the multi-purpose protective garment 10 of the present invention provides a single protective garment that is suitable for being worn in multiple different emergency situations. For example, when responding to an emergency medical situation, the fire fighter, or other emergency worker can simply wear the jacket inner module 16 and the pants inner module 20. Then, when responding to an emergency fire fighting situation, the fire fighter can wear both the inner modules 16 and 20 together with the outer modules 18 and 22. In this manner, the multi-purpose protective garment 10 provides the emergency response worker with the appropriate garment for multiple different jobs. In addition, the fire fighter, or other emergency responder can decide on-site which is the optimal combination of garments to be worn for the task at hand.

[0069] Chemical/Biological Suit

[0070] Shown in FIG. 12 is a protective garment 120 that is suitable for protection against chemical and biological threats. The protective garment 120 comprises a full-body encapsulation suit 122 as well as the jacket outer module 18 and the pants outer module 22, which are to be worn over the full-body encapsulation suit 122. In such an embodiment, the full-body encapsulation suit 122 would be worn instead of the jacket inner module 16 and the pants inner module 20.

[0071] The combination of the full-body encapsulation suit 122 with the jacket outer module 18 and the pants outer module 22 provides an emergency responder with an overall protective garment 120 that meets a level-two protective factor as defined by the NFPA 1994. Standard on Protective Ensembles for Chemical/Biological Terrorism Incidents. It is possible that an emergency responder could arrive at a scene wearing a protective garment 10 that includes both the inner modules 16 and 20 and the outer modules 18 and 22. Only to learn that there is the possibility of a chemical/biological hazard. In such a situation, the emergency responder can quickly change protective garments by removing the outer modules 18 and 22 and the inner modules 16 and 20, donning the full body encapsulation suit 122 and then re-donning the outer modules 18 and 22. In this manner, the emergency responder will be able to quickly adjust his/her protective garment in order to be fully equipped for the type situation.

[0072] In a non-limiting example of implementation, the full-body encapsulation suit is made of a selectively permeable membrane film that is laminated to, but not limited to, an aramid fabric substrate. Such films are suitable for protection against chemical and biological hazards, and are presently developed by Stedair Inc., W.L. Gore and Dupont, among others. It should however be understood that other films suitable for protection against chemical and biological hazards that are identified as chem/bio terror agents could be used without departing from the spirit of the invention.

[0073] Although the present invention has been described in considerable detail with reference to certain preferred embodiments thereof, variations and refinements are possible without departing from the spirit of the invention. Therefore, the scope of the invention should be limited only by the appended claims and their equivalents.

1) A protective garment comprising:

a jacket having a jacket inner module and a jacket outer module; and

a pair of pants having a pant inner module and a pant outer module;

said jacket inner module and said pant inner module each comprising:

a) an inner layer of moisture barrier material;

b) an outer layer of abrasion resistant material;

said jacket outer module and said pant outer module each comprising:

a) an inside layer of thermal insulation material;

b) an outside layer of abrasion resistant material;

wherein said jacket inner module and said pant inner module form a protective garment of a first type, and said jacket inner module and said pant inner module together with said jacket outer module and said pant outer module form a protective garment of a second type.

2) A protective garment as defined in claim 1, wherein said first type of protective garment is in compliance with the NFPA 1999 emergency medical service standard and the NFPA 1951 urban search and rescue standard.
3) A protective garment as defined in claim 2, wherein said second type of protective garment is in compliance with the NFPA 1971 structural fire fighting standard.

4) A protective garment as defined in claim 3, wherein said second type of protective garment is in compliance with the NFPA 1994. Standard on Protective Ensembles for Chemical/Biological Terrorism Incidents.

5) A protective garment as defined in claim 1, wherein said jacket inner module comprises a front side and a second front side that are separated by a frontal opening, said frontal opening being closable via at least one fastening arrangement.

6) A protective garment as defined in claim 5, wherein said at least one fastening arrangement comprises a zipper having a first portion on said first front side and a second portion on said second front side.

7) A protective garment as defined in claim 6, wherein said inner layer module and said jacket outer module are removably attachable to one another.

8) A protective garment as defined in claim 7, wherein said jacket outer module comprises a front side and a second front side that are separated by a frontal opening, said jacket outer module comprising a first fastening arrangement for closing said frontal opening and a second fastening arrangement for joining said jacket inner module to said jacket outer module.

9) A protective garment as defined in claim 8, wherein said second fastening arrangement of said jacket outer module is operable to engage with said at least one fastening arrangement of said jacket inner module.

10) A protective garment as defined in claim 5, wherein said pant inner module and said pant outer module are removably attachable to one another via a second fastening arrangement.

11) A protective garment as defined in claim 1, wherein said pants outer module include a first leg and a second leg, said first leg including a first longitudinal opening along a first outer leg portion, and said second leg including a second longitudinal opening along a second outer leg portion.

12) A protective garment as defined in claim 11, wherein said first longitudinal opening and said second longitudinal opening are adapted for being closed via zippers.

13) A protective garment as defined in claim 12, wherein said pants outer module includes a hook and dee fastener.

14) A protective garment as defined in claim 1, wherein said outer layer of abrasion resistant material includes water and flame resistant properties.

15) A protective garment as defined in claim 14, wherein said inner layer of moisture barrier material is resistant to liquid and viral penetration.

16) A protective garment as defined in claim 15, comprising an air pocket between said inner layer and said outer layer.

17) A protective garment as defined in claim 1, wherein said inner layer is a laminated fabric.

18) A protective garment as defined in claim 1, wherein said outer layer is a woven aramid fabric.

19) A protective garment as defined in claim 1, wherein said inside layer is Nomex Mesh.

20) A protective garment as defined in claim 1, wherein outside layer is woven aramid fabric.

21) A protective pair of pants comprising:
   an inner module comprising:
   a) an inner layer of moisture barrier material;
   b) an outer layer of abrasion resistant material;
   an outer module comprising:
   a) an inside layer of thermal insulation material;
   b) an outside layer of abrasion resistant material.

22) A protective garment as defined in claim 21, wherein said pants outer module includes a first leg and a second leg, said first leg including a first longitudinal opening along a first outer leg portion, and said second leg including a second longitudinal opening along a second outer leg portion.

23) A protective garment as defined in claim 22, wherein said first longitudinal opening and said second longitudinal opening are closable via zippers.

24) A protective garment as defined in claim 23, wherein said pants outer module includes a hook and dee fastener.

25) A protective garment as defined in claim 21, wherein said inner layer is a laminated fabric.

26) A protective garment as defined in claim 25, wherein said outer layer is a woven aramid fabric.

27) A protective garment as defined in claim 21, wherein said inside layer is Nomex Mesh.

28) A protective garment as defined in claim 27, wherein outside layer is woven aramid fabric.

29) A multi-purpose protective garment comprising:
   an inner module and an outer module, said inner module being suitable for being worn separately, and in combination with said outer module;
   said inner module forming a first protective garment that is compliant with NFPA 1999 standard on protective clothing for emergency medical operations and NFPA 1951 standard on protective ensemble for USAR (Urban Search and Rescue); and
   said inner module in combination with said outer module forming a second protective garment that is compliant with NFPA 1971 standard on protective ensemble for structural firefighting.

30) A multi-purpose protective garment as defined in claim 29, wherein said protective garment includes a combination of a jacket and a pair of pants.

31) A protective garment comprising:
   an inner garment suitable for protecting the wearer against at least one of chemical and biological hazards;
   a jacket outer module comprising a torso covering portion and a pair of sleeves suitable for being worn over at least a portion of said inner garment.

32) A protective garment as defined in claim 31, further comprising a pants outer module suitable for being worn over at least a portion of said inner garment.

33) A protective garment as defined in claim 31, wherein said inner garment includes a full-body encapsulation suit.

34) A protective garment as defined in claim 31, wherein said inner garment comprises a selectively permeable membrane film that is laminated to an aramid fabric.

35) A protective garment as defined in claim 31, providing a level-two protective factor as defined by NFPA 1994 standard on protective ensembles for chemical/biological terrorism.