

MULTI FUNCTION STICK-ON FOR FACE RESPIRATORY PIECES

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TECHNICAL FIELD OF INVENTION

An accessory to be secured onto the interior of a face respiratory piece such as a face mask, respiratory device or respiratory protective device, enabling it to offer multi functions thus performing as a specialty face mask, enhanced respiratory device or enhanced respiratory protective device.

BACKGROUND ART

15 Face respiratory pieces such as face masks, respiratory device or respiratory protective devices are often used e.g. in hospitals, medical clinics and even in the public when a person is not feeling well. Often the user finds the face mask or respiratory device or respiratory protective device alone cannot be sufficient in meeting his health needs which may include relief of his medical condition or enhanced protection against infection from others.

Therefore the face mask, respiratory device or respiratory protective devices (referred herein as " Face Respiratory Piece ") had to be imbued with other functions such as impregnation with some chemicals which helps to alleviate the medical condition of the user or enhanced protection or even improve comfort of the wearer. Such face respiratory devices thus imbued with other functions are speciality face mask/enhanced respiratory device/enhanced respiratory protective device and referred herein as " enhanced Face respiratory pieces ".

Other inventors had tried the following methods to produce enhanced face respiratory pieces:

5 (1) impregnate or pre-treated the filter layers inside the face respiratory piece with chemicals/biological agents/ antiseptic drug / relief medicine. An example of such an approach is WO 00/41662 wherein a face mask has an intermediate filtration layer made of a filtering material impregnated with an antiseptic drug.

10 (2) insert chemicals/ biological agents/ antiseptic drugs/ relief medicine prepared in the form of solids in between filter layers of face respiratory piece. An example of such an approach is FR 2853497 in which the antiseptic substance is held in a supple flat container that forms, together with an absorbent substrate in a pocket on the inner surface of a mask, an assembly inserted in a pocket in the mask.

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(3) introduce chemicals/ biological agents/ antiseptic drugs/ relief medicine in the form of liquids in between filter layers of the face respiratory piece;

(4) contain the chemicals/ biological agents/ antiseptic drugs/relief medicine inside
20 micro-capsules, which upon tearing and rupturing of these containers, release chemicals into a selected portion of the face respiratory piece. An example of this approach is US 4 856 509 in which an embodiment discloses the use of a chemical in the form of a liquid disposed in micro-capsules which are ruptured or otherwise activated when the mask is used.

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PROBLEMS TO BE SOLVED BY THE INVENTION

There are several problems arising from the aforementioned approaches to making enhanced face respiratory pieces.

(1) The high cost of wastage in times of poor sales. The rolls of treated fabric and the range of completed products comes with embedded solid, liquid inserts and micro-capsules have limited shelf life and therefore limited life span. If these enhanced respiratory face pieces remained unsold after their expiration dates had passed, these would have to be discarded.

(2) There is no visual indication of use of the chemicals/ biological agents/ antiseptic drugs/ relief medicine. If for example, micro capsules are used, there is no visual indication how many micro-capsules have been ruptured (since they are embedded), or whether they have been completely or partially ruptured, or even whether the treated filter layers are working properly, etc. The wearer can only rely on his olfactory senses (smell of chemicals, medicine, etc) and manufacturer's reputation to assure himself that the enhanced face respiratory piece he has donned is 'working' properly.

(3) There is no indication to show the wearer of the enhanced face respiratory piece the length of time the wearer was subject to the medication contained therein.

(4) The release of chemicals/ biological agents/ antiseptic drugs/ relief medicine into an absorbent layer (e.g., the hydrophilic filter layer) inside the enhanced face respiratory

piece which then releases the chemicals/ biological agents/ antiseptic drugs into the wearer's mouth and nose is an old fashioned and inefficient method. Such an approach is as good as dosing the mask or respiratory device with chemicals and breathing through it (indirect approach).

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(5) The release of chemicals/ biological agents/ antiseptic drugs/ relief medicine is passive, i.e., the continuous release of active materials over a time period; the wearer is unable to intervene in the release process by controlling the intensity of the chemical/ medicinal/ bactericidal effects.

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MEANS FOR SOLVING THE PROBLEMS

In view of these shortcomings, the inventors have proposed the use of a multi function stick-on accessory (hereinafter referred to as "stick-on") to be secured to the interior of a face respiratory piece such as face mask, respiratory device or respiratory protective device .

The multi-function stick-on houses a determined amount of chemicals/ biological agents/ antiseptic drugs /relief medicine, which can be released directly from the face respiratory piece into the wearer's mouth and nose to deliver designated functions (not exhaustive). Depending on the type of chemicals/ biological agents/ antiseptic drugs / relief medicine, such functions (not exhaustive) could be for:-

- (1) medical treatment, e.g., asthma
- (2) sickness relief, e.g., flu, cold, cough
- (3) malodor reduction or removal, e.g., breaks down offensive smells and

nauseous gases

- (4) therapeutic, e.g., aromatherapy
- (5) habit control, e.g., anti-smoking treatment

5 Such a multi function stick-on is simple to use and at the same time improve the performance of a normal face mask by enhancing its use as a specialty face mask, enhanced respiratory device or enhanced respiratory protective device, delivering better performance and yet overcoming most of or all the aforementioned problems encountered by previous specialty face masks.

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The present invention also describes novel methods to make the stick-on perform multi-function roles, depending on the contents contained therein, all of which offer the following properties :-

- 15 (1) Efficient inhalation of chemicals/ biological agents/ antiseptic drugs / relief medicine through their active discharge into the void formed between the interior surface of the face respiratory piece and the wearer's facial profile;
- 20 (2) Release of volatile chemicals/ biological agents/ antiseptic drugs / relief medicine only upon activation e.g., peel off an adhesive protective cover on top of the volatile chemicals/biological agents/antiseptic drugs/relief medicine;
- 25 (3) Active control of the rate of discharge of chemicals/ biological agents/ antiseptic drugs/relief medicine, e.g., via a timed release mechanism; and

- (4) visual indication to the wearer of the depletion of the chemicals/
biological agents/ antiseptic drugs / relief medicine.

The present invention therefore allows a normal face mask/respiratory device/
5 respiratory protective device to be equipped with additional functions; thus with the
use of the multi function stick-on on a face respiratory piece, the face respiratory
piece is turned into a specialty face mask/enhanced respiratory device/enhanced
respiratory protective device. The normal face mask when used with such a stick-
on of the invention is more value-added and offers the wearer more benefits and
10 protection at a lower cost, apart from being a normal face mask/respiratory device/
respiratory protective device.

The type of face respiratory piece for which the stick-on could be used on
includes normal face masks, the " pouch mask " by Megatech Scientific Pte Ltd, the
15 " cone mask " by 3M, the " duckbill mask " by Kimberly Clark, and the " arch mask"
by Alpha Pro Tech and other types of respiratory device or respiratory protective
device not specifically mentioned herein.

SUMMARY OF THE INVENTION

20 The inventors can opt to make a sophisticated specialty face mask with added
functions in the form of container containing some form of
medication/chemical/antiseptic drugs/relief medicine/biological agents, but

- 25 (1) it could cost much more to make one;

(2) it may not be cost-economical since it is used once and disposed;

(3) it may not sell well because of its high cost;

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(4) it may be reused several time by customers because of its high cost but this practice is unsafe unless a protocol is present and enforced.

The inventors have also considered making the specialty face mask from a planar
10 face mask but the fittings of the planar face mask around the wearer's face is not tight-
fitting and could lead to leakages of substantial amount of
air/gas/medication/chemical/antiseptic drugs/relief medicine/biological agents (in the
form of vapor). In addition, the facial area of the wearer covered by the planar mask is
also not wide enough to offer complete protection from spilling liquids and chipping
15 solids.

The inventors have thought of making a specialty face mask by adopting a hard
mask approach (e.g., full face, glass shield with canned screw-in cartridges, etc worn by
fire-fighters, special military forces) but

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(1) this kind of mask will be sophisticated;

(2) the mask will be heavy and less portable;

25 (3) the mask will be harder to package because it is one solid piece;

(4) the mask will take up considerable storage space because it is not foldable.

It is therefore a first objective of the invention to provide an accessory in the form of a stick-on which is secured to the interior of a low cost and disposable face respiratory piece enabling it to perform like a specialty face mask.

A second objective for the invention to produce a low cost stick-on for a face respiratory piece which can contain different types of chemicals/ biological agents/ antiseptic drugs / relief medicine in the form of a volatile substance and which can be selected by the user, for inhalation, performing such functions as to suit the user's requirements including medical treatment (e.g. asthma); sickness relief (e.g. flu, cold, cough); malodor reduction or removal (e.g. breaks down offensive smells and nauseous gases); therapeutic (e.g. aromatherapy) and habit control (e.g. anti-smoking treatment).

A third objective for the invention to produce a low cost stick-on for a face respiratory piece containing different types of chemicals/ biological agents/ antiseptic drugs / relief medicine in the form of a volatile substance, for use with a face respiratory piece, which can be released to the user upon activation.

A fourth objective for the invention to produce a low cost stick-on containing different types of volatile chemicals/ biological agents/ antiseptic drugs / relief medicine in the form of a volatile substance, for use with a face respiratory piece, which can be released in a controlled manner by the user.

A fifth objective for the invention to provide a low cost stick-on containing different types of chemicals/ biological agents/ antiseptic drugs / relief medicine in the form of a volatile substance for use with a face respiratory piece, which offers visual
5 indication of the depletion of the chemicals/ biological agents/ antiseptic drugs / relief medicine in the form of the volatile substance.

The multi function stick-on of this invention can perform the function of a specialty face mask, when used with any face respiratory face piece having these
10 characteristics:-

- (1) Any face respiratory piece which has a void between the inner side of the mask and the wearer's mouth and nose.
- 15 (2) Any face respiratory piece design that covers half the wearer's face and portion of the wearer's body underneath the chin.
- (3) Any face respiratory piece design that offers a better (air-tight) fitting around the contact areas of the face mask and the wearer.
- 20 (4) Any face respiratory piece which is light-weight and soft, and foldable, thereby easy to store and transport i.e., portable, can be carried along by a person.
- (5) Any face respiratory piece capable of housing an independent accessory,
25 which is stuck-onto the interior surface of a face respiratory piece to hold

chemicals/ biological agents/ antiseptic drugs/ relief medicine in the form of a volatile substance.

5 Preferably, the multi-function stick-on for use with a face respiratory piece is formed as follows:-

(a) one or more non-porous strips of adhesive cover film on top
of the volatile substance;

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(b) a porous net-like material to secure the volatile substance of
a designated thickness, the volatile substance residing on top
of the colored base;

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(c) an adhesive underneath the colored base, securing the stick-on
to the interior surface of the face respiratory piece;

wherein the amount of volatile substance is released for inhalation by the wearer
by the removal of the one or more non-porous strips of adhesive strip, and the
20 rate of discharge of volatile substance dependent on the number of non-porous
strips removed, and when the volatile substance is depleted, the colored base
can be seen, thereby showing to the wearer that the stick-on could be disposed
off.

25 Alternatively, the multi-function stick-on for use with a face respiratory piece is
formed as follows:-

(a) an outer plastic cap having side edges and a plurality of perforations;

5 (b) an inner plastic cap cover having securing side edges and a plurality of perforations; the volatile substance of a designated thickness contained therein and residing in a colored short cylinder plastic trough;

10 (c) an adhesive at the underside of the colored short cylinder plastic trough, securing the stick-on to the interior of the face respiratory piece,

wherein the volatile substance is released for inhalation by the wearer upon turning of perforated outer plastic cap, and the rate of discharge of volatile substance is controlled by the number of perforations in the perforated outer cap and the number of perforations in the perforated inner cover in alignment with each other and when the volatile substance is depleted, the colored short cylinder plastic trough can be seen, thereby showing to the wearer that the stick-on could be disposed off.

20 Alternatively, the multi-function stick-on for use with a respiratory face piece is formed as follows:-

(a) a rectangular colored container having four vertical sides and a base with an opening at the top;

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(b) one or more horizontal panels slidable on top of the opening

of the rectangular colored container;

(c) the volatile substance of a designated thickness residing in the base of the rectangular colored container, the volatile substance being of a different color from the rectangular colored container

(d) an adhesive at the underside of the base of the colored container, securing the stick-on to the interior of the respiratory face piece

wherein the volatile substance is released into the void for inhalation by the wearer upon moving the slidable panel away from a vertical side of the container to form a gap, the amount of volatile substance released controlled by the width of the said gap, and when the volatile substance is depleted, the base of the colored container can be seen, thereby showing to the wearer that the stick-on could be disposed off.

Advantageously, the designated thickness of the volatile substance ensures a certain delivery of chemicals/ biological agents/ antiseptic drugs / relief medicine over a pre-determined time span, T.

Advantageously, the direct release of chemicals/ biological agents/ antiseptic drugs/ relief medicine into the void between the inner side of the respiratory face piece and the wearer's mouth and nose is more effective in delivering the said chemicals/ biological agents/ antiseptic drugs/ relief medicine.

Advantageously, the stick-on is disposed after the volatile substance in the form of chemicals/ biological agents/ antiseptic drugs / relief medicine is fully depleted and a new stick-on secured to the interior of the respiratory face piece.

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Preferably, the volatile substance can be a gel or solid sublimable form of chemicals/ biological agents/ antiseptic drugs/ relief medicine.

BRIEF DESCRIPTION OF THE DRAWINGS

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For a better understanding of the invention, its advantages and the objectives attained by its application, reference should now be made to the accompanying drawings. The accompany drawings will illustrate a preferred embodiment and a few other embodiments of the invention and together with the description herein, serve to explain the workings and principals of the invention.

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Figure 1 is an illustration of a wearer donning a pouch mask, which is a type of face respiratory piece (20).

20 Figure 2 is a diagram illustrating the placement of the stick-on (22) at the interior surface of the pouch mask (20).

Figure 3 is a diagram illustrating a first embodiment of the stick-on of the invention.

25 Figure 4 is a diagram illustrating a second embodiment of the stick-on of the invention.

Figure 5a and 5b show other embodiments of the stick-on of the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

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Description of the preferred embodiment and a few embodiments of the present invention are given herein with reference to the drawings.

Figure 1 is an illustration of a wearer donning a face respiratory piece (20) such
10 as a pouch mask manufactured from Megatech Scientific Pte Ltd. The pouch mask has a bib covering the neck (an optional feature). As illustrated, the pouch mask covers half of the wearer's countenance and a portion of his/her chin. The added bib further covers the wearer's neck and prevents it from exposure to the environment.

15 It should be pointed out that any type of face respiratory piece that has a design which vacates a void between the inner side of the respiratory face piece and the wearer's mouth and nose can be adapted for use with the multi-function stick-on. It should also be pointed out that any face respiratory piece that covers half the wearer's face and portion of his/her underneath chin, e.g., the pouch mask by
20 Megatech Scientific Pte Ltd or any type of face mask or respiratory device or respiratory protective device from other manufacturers can also be adapted for use with the multi-function stick-on. The type of face respiratory piece for which the stick-on could be used on includes normal face masks, other types of face mask such as the "cone mask" by 3M, the "duckbill mask" by Kimberly Clark, and
25 the "arch mask" by Alpha Pro Tech and other types of respiratory face device and respiratory protective device not specifically mentioned herein. The type of face

respiratory piece for use with the multi-function stick-on is not restrictive so long as such face piece offers a better (air-tight) fitting around the contact faces of the face piece and wearer, is light-weight and soft for easy storage (i.e., foldable) and transport (i.e., portable, can carry along with a person).

Preferably, the face respiratory piece is made of filter layers that provide high breathability and high mechanical filtration capability, e.g., spunbond polypropylene (PP) and polyethylene (PE), meltblown PP, etc.

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Figure 2 is a diagram illustrating the placement of the stick-on (22) at the interior surface of the pouch mask (20).

It is thus imperative for a void or cavity (24) to be present between the inner side of the face piece and the wearer's nose and mouth to ensure comfort and no obstruction. There is no restriction or limitation of the void size (24) as long as after the stick on (22) is fitted, so long as there is still some space between the wearer's nose/mouth and the stick-on (22).

20 The back of such a multi function stick-on is attached onto the interior surface of the face respiratory piece while the front side of the multi function stick-on can be made to be fully or partially exposed to release the volatile contents of the chemicals/ biological agents/ antiseptic drugs/ relief medicine directly into the void between the inner side of the face respiratory piece and the wearer's mouth and nose. Upon breathing in the volatile contents which filled the void formed between the inner side of the face mask and the wearer's nose and mouth, the wearer received

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the remedial effects offered by the chemicals/ biological agents/ antiseptic drugs/ relief medicine.

5 Figure 3 is a diagram illustrating the schematic of the main embodiment of the stick-on (22). Preferably, as mentioned earlier, the form of stick-on comprises at least the following five components:

(a) a non-porous adhesive cover film (26) ;

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(b) a porous net-like material (28) to secure the volatile substance;

(c) the volatile substance (which is the chemicals/ biological agents/ antiseptic drugs/ relief medicine) in the form of a gel or solid of a designated thickness (30);

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(d) a colored bottom base (32).;

(e) an adhesive behind the colored bottom base (34).

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The non-porous adhesive cover film (26) is pasted over the top surface of the volatile substance (in the form of a gel or a solid) (30) to prevent pre-evaporation of the volatile contents before actual use. It should be noted that the stick-on would also be kept in an air-tight wrapper by the manufacturer to ensure the volatile substance will not in any way lose its efficacy before use.

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In the event when the wearer is ready to don the face respiratory piece (20), the adhesive cover film (26) can be peeled off to expose the volatile substance (30). In order to offer controlled release of the chemicals, the adhesive cover film (26) could be made of say, four rectangular strips. The user can peel off the first rectangular strip for use of the first hour, peel off the second rectangular strip for the second hour and so on. The porous net-like material (28), which can be either plastic/fabric, is needed to hold the volatile substance in place. It is porous so it does not hinder the release of volatile contents into the void between the face respiratory piece and the wearer's face.

Once exposed (i.e., after the adhesive cover film (26) is removed), the volatile substance (30) which is the chemicals/ biological agents/ antiseptic drugs/ relief medicine starts to volatilize or vaporize. In one scenario, the chemicals will be inhaled by the wearer as a medication for treating a malady such as a cold, viral infection or the like associated with the throat, sinuses and lungs which receive and pass the breath bearing the same. In another scenario, the chemicals can be medication for asthmatic treatment. If the chemical is an aromatherapeutic substance, the wearer would be refreshed.

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The volatile substance (30) is designed to be of a certain thickness so that it contains the adequate amount of medical volatile components to sustain its intended purpose over a specified time duration, T (e.g., 4 hours). Within this stipulated time span, T, the volatile substance (30) will continuously release its medical volatile components into the cavity (24) between the wearer's nose and mouth and the inner side of the face respiratory piece.

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The volatile substance (30) resides on the colored bottom base 32 (which is either of plastic or fabric material). Upon commencement of use, the volatile substance will obscure the view of the colored bottom base.

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The colored bottom base (32) is by design, of a different color from the volatile substance (30). The reason being that once the volatile substance (30) is depleted, the wearer can see the colored bottom base. Therefore the wearer is able to know how long has he been wearing the face piece (e.g., 4 hours) and that the face piece (20) or the stick-on (22) is now ready for disposal since the chemicals/ biological agents/ antiseptic drugs/ relief medicine have all been used up.

The adhesive found behind the colored bottom base (34) serves to immobilize the stick-on (22) at the interior surface of the pouch mask (20) (see Figure 2) so that it will not be easily dislodged from its position when the wearer moves his/her face, sneezes or coughs.

There is no restriction in the outlook or design of the stick-on as long as it serves its intended purpose.

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There is also no restriction in the materials used to making the various parts of the stick-on as long as it serves its intended purpose.

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DESCRIPTION OF OTHER EMBODIMENTS

Figure 4 is a diagram illustrating the schematic of another embodiment of a stick-on

5 (22). Preferably, this form of stick-on comprises the following five components:

(a) a perforated outer cap (preferably, turning plastic cap with side edges) (36);

10 (b) a perforated inner cover (preferably, plastic cap with securing side edges) (38);

(c) a volatile substance (which is the chemicals/ biological agents/ antiseptic drugs/ relief medicine) in the form of a gel or solid of a designated thickness (30);

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(d) a colored plastic trough (short cylinder plastic trough) (40);

(e) an adhesive at the underside of the colored base (34).

20 A stick-on of this embodiment offers controlled a precise release of chemicals – for e.g., by turning the outer perforated cap fully or partially (which then determines the degree of alignment between the openings on the face of the perforated outer cap and the openings on the face of the perforated inner cover), the wearer can actively decide on the intensity of delivery of medicinal effects.

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The perforated outer cap (36) works as follows.

(i) by manually turning the perforated outer cover (36) in the clockwise direction
5 until it halts completely, the openings (44) on the face of the perforated inner cover
(38) is fully exposed (i.e., the openings (42) on the face of the perforated outer cap (36)
is in-line with the openings (44) on the face of the perforated inner cover (38));

(ii) by manually turning the perforated outer cover (36) in the anti-clockwise direction until
10 it halts completely, the openings (44) on the face of the perforated inner cover (38) is
fully shielded (i.e., the openings (42) on the face of the perforated outer cap (36) is not
in-line with the openings (44) on the face of the perforated inner cover (38));

(iii) by manually turning the perforated outer cap (36) partially in the clockwise direction
15 (before it halts completely), the openings (44) on the face of the perforated inner cover
(38) is partially exposed;

(iv) by manually turning the perforated outer cap (36) partially in the anti-clockwise
direction (before it halts completely), the openings (44) on the face of the perforated
20 inner cover (38) is partially shielded;

The perforated inner cover (38) works as follows.

(i) there are small openings (44) on the face of the perforated inner cover (38);

(ii) these are the avenues whereby the vapor of the chemicals/ biological agents/ antiseptic drugs/ relief medicine from the volatile substance (30) can escape;

5 (iii) the vapor of the chemicals/biological agents/antiseptic drugs/relief medicine will be released into the cavity (24) between the wearer's nose and mouth and the inner side of the face respiratory piece as and when

(1) the openings (42) on the face of the perforated outer cap (36) is in-line with
10 the openings (44) on the face of the perforated inner cover (38);

(2) the openings (42) on the face of the perforated outer cap (36) is partially in-line with the openings (44) on the face of the perforated inner cover (38);

15 (iv) the amount of chemicals/ biological agents/ antiseptic drugs/ relief medicine released into the cavity (24) between the wearer's nose and mouth and the inner side of the face respiratory piece is dependent on the degree of alignment between the openings (42) on the face of the perforated outer cap (36) and the openings (44) on the face of the perforated inner cover (38);

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This manual turning of the perforated outer cap and perforated inner thereby enable the wearer to control the intensity (or dosage) of the release of chemicals/ biological agents/ antiseptic drugs/ relief medicine according to his own preference.

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The volatile substance (in the form of a gel or solid) of a designated thickness (30) works as follows.

- (i) the volatile substance is designed to be of a certain thickness so that it contains
5 the right amount of chemicals/biological agents/ antiseptic drugs/ relief medicine to sustain its intended purpose over specified time duration, T, e.g., 4 hours;
- (ii) within this stipulated time span, T, the volatile substance (30) will continuously
be released into the cavity (24) between the wearer's nose and mouth and
10 the inner side of the face respiratory piece (20).

A colored plastic trough (40) houses the volatile substance (30). The colored plastic trough (40) should be of a different color from the volatile substance (30); the reason being that once the volatile substance (30) is depleted, the wearer can see the
15 colored plastic trough (40) and therefore knows how long has he been wearing the face respiratory piece (e.g., 4 hours) and that the face respiratory piece (20) or the stick-on (22) is now ready for disposal since the chemicals/ biological agents/ antiseptic drugs/ relief medicine have all been used up.

20 Whatever the form of embodiment, a user would select the type of stick-on best suited for his use. For the user who is having a cold, the user would choose a stick-on offering cold relief medication. The adhesive behind the colored bottom base is then stuck onto the interior surface of the face respiratory piece (20). The cold relief medication in the stick-on is then activated by removal of the non-porous
25 plastic/fabric adhesive cover film (first embodiment) or turning the openings (42) on

the face of the perforated outer cap (36) until the openings (42) are in line with the openings (44) on the face of the perforated inner cover (38). The face respiratory piece (20) is then worn and after some time, the user can visually check on the condition of the stick-on. If the colored base of the stick-on is shown, the user would know that the volatile substance (30) is near depletion and the user can decide whether to continue with a fresh stick-on (22) or not.

Figure 5a and Figure 5b shows other embodiments of the stick-on of the invention. Fig. 5a shows a rectangular colored container

(a) having four vertical sides and a base with an opening at the top ;

(b) one or more horizontal panels slidable on top of the opening of the rectangular colored container;

(c) the volatile substance of a designated thickness residing in the base of the rectangular colored container, the volatile substance being of a different color from the rectangular colored container

(d) an adhesive at the underside of the base of the colored container, securing the stick-on to the interior of the face respiratory piece.

The volatile substance is released into the void for inhalation by the wearer upon moving the slidable panel away from a vertical side of the container to form a

gap. In this embodiment, the rate of discharge of volatile substance released controlled is determined by the width of the said gap, the wider the gap, the faster the rate of discharge. When the volatile substance is depleted, the base of the colored container can be seen, and the wearer can replace the stick-on with a new stick-on.

Again, there is no restriction in the outlook or shape or design of the stick-on as long as it serves its intended purpose.

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Again, there is no restriction in the materials used to making the stick-on as long as it serves its intended purpose.

ADVANTAGEOUS EFFECTS OF THE INVENTION

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A stick-on is a less expensive alternative to a specialty face mask.

The stick-on is low cost since it can be manufactured separately from the face respiratory piece which can be any suitable type.

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The stick-on is more flexible in use as a specific type of stick-on accessory can be purchased by a user to meet a specific need. This would also result in lower inventory costs for retailers.

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A stick-on also offers lower wastage cost. After the expiration date, only the accessory or the stick-on would have to be disposed. This is not so for the specialty face mask of the prior art whereby the whole mask has to be discarded.

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The chemicals/ biological agents/ antiseptic drugs/ relief medicine is stored safely in the stick-on and put on display until purchase and use, thus offering a longer shelf life for such active substances.

- 10 The chemicals/ biological agents/ antiseptic drugs/ relief medicine is released directly into the cavity between the wearer's mouth and nose for maximum exposure and efficacy.

- The stick-on can be removed from the face respiratory piece after its contents has
15 been depleted and replaced with a new stick-on using the same face respiratory piece. For the other specialty face masks types, another new mask has to be donned. Thus, use of the stick-on is economical.

- The user can visually check on the condition of the substance in the stick-on and
20 thus less wastage is likely to result from too premature discarding of the stick-on.

The stick-on would allow the user to ensure continuous delivery of chemicals/ biological agents/ antiseptic drugs/ relief medicine with certainty.

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CLAIMS

1. A multi function stick-on for use with a face respiratory piece, the face
5 respiratory piece having an interior surface in which the multi function stick-on is
secured thereto, the interior surface of the face respiratory piece and a wearer's
mouth forming a void, the multi-function stick-on comprising at least the following:-

a volatile substance;

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a base in which the volatile substance resides on;

the base secured to the interior surface of the face respiratory piece;

15 wherein the volatile substance is a sublimable chemical, a biological agent or an
antiseptic drug or a medicine which is released into the void for inhalation by
the wearer.

2. A multi function stick-on for use with a face respiratory piece as claimed in
20 Claim 1, wherein the base is of a different color from the color of the volatile
substance, such that after the volatile substance has been actively released into the
void for inhalation, and over time until the volatile substance has been depleted,
the color of the base can be seen, thereby indicating to the wearer the volatile
substance has been depleted.

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3. A multi-function stick-on for use with a face respiratory piece as claimed in Claim 2, formed as follows:-

5 (a) one or more non-porous strips of adhesive cover film on top of the volatile substance;

(b) a porous net-like material to secure the volatile substance which is of a designated thickness and which resides on top of the base;

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(c) an adhesive underneath the base, securing the stick-on to the interior surface of the face respiratory piece,

wherein the amount of volatile substance to be released into the void for
15 inhalation by the wearer is controlled by the removal of the one or more non-porous strips of adhesive cover film, and when the volatile substance is depleted, the color of the base can be seen, thereby showing to the wearer that the stick-on could be disposed off.

20 4. A multi-function stick-on for use with a face respiratory piece as claimed in Claim 2, formed as follows:-

(a) an outer plastic cap having side edges and a plurality of perforations;

25 (b) an inner plastic cap cover having securing side edges and a plurality of

perforations; the volatile substance of a designated thickness contained therein and residing in a colored short cylinder plastic trough;

- 5 (c) an adhesive at the underside of the colored short cylinder plastic trough, securing the stick-on to the interior of the face respiratory piece;

wherein the volatile substance is released into the void for inhalation by the
10 wearer upon turning of perforated outer plastic cap, and the rate of discharge of volatile substance is controlled by the number of perforations in the perforated outer cap and the number of perforations in the perforated inner cover which are in alignment with each other and when the volatile substance is depleted, the colored short cylinder plastic trough can be seen, thereby showing to the wearer
15 that the stick-on could be disposed off.

5. A multi-function stick-on for use with a face respiratory piece as claimed in Claim 2, formed as follows:-

- 20 (a) a rectangular colored container having four vertical sides and with a base and an opening at the top;
- (b) one or more horizontal panels slidable on the opening of the rectangular colored container;

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(c) the volatile substance of a designated thickness and having a different color from the rectangular colored container, the volatile substance residing on the base of the rectangular colored container;

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(d) an adhesive at the underside of the base of the rectangular colored container, securing the stick-on to the interior of the face respiratory piece

10 wherein the volatile substance is released into the void for inhalation by the wearer upon moving the slidable panel away from one vertical side of the container to form a gap, the amount of volatile substance released controlled by the width of the said gap, and when the volatile substance is depleted, the base of the colored container can be seen, thereby showing to the wearer that
15 the stick-on could be disposed off.

6. A multi-function stick-on for use with a face respiratory piece as claimed in any one of the preceding claims, wherein the volatile substance is of a certain thickness, to ensure release of the volatile substance into the void between the
20 interior surface of the mask and the wearer's mouth, such that the volatile substance is entirely depleted over a pre-determined time span, of at least 4 hours.

7. A multi function stick-on for use with a face respiratory piece as claimed in
25 any one of the preceding claims, wherein the volatile substance is a sublimable chemical for therapeutic purpose or habit control.

8. A multi function stick-on for use with a face respiratory piece as claimed in any one of Claims 1 to Claim 6, wherein the volatile substance is a sublimable chemical for malodor reduction or removal.

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9. A multi function stick-on for use with a face respiratory piece as claimed in any one of Claim 1 to Claim 6, wherein the volatile substance is a sublimable antiseptic drug or a medicine for relief of a medical condition or sickness.

10 10. A multi function stick-on for use with a face respiratory piece as claimed in any one of Claim 1 to Claim 6, wherein the volatile substance is a gel or a sublimable solid.

11. A multi function stick-on for use with a face respiratory piece as claimed in
15 any one of Claim 1 to Claim 6, wherein the correct and appropriate volatile substance can be selected by a user depending on the user's circumstances.

12. A multi-function stick-on for use with a face respiratory piece mask as
claimed in any one of Claim 1 to Claim 6, wherein the multi-function stick-on can
20 be disposed off after the volatile substance is fully consumed and another multi-function stick-on secured onto the interior of the face respiratory piece for another dose of sublimable chemical, a biological agent, an antiseptic drug or a medicine for relief of a medical condition.

25 13. A multi-function stick-on for use with a face respiratory piece as claimed in any one of Claim 1 to Claim 6, wherein the multi-function stick-on is secured to

the interior surface of the face mask by adhesive tape, double sided adhesive tape or the like.

- 5 14. A multi-function stick-on for use with a face respiratory piece as claimed in any one of Claim 1 to Claim 6, in which the face respiratory piece can be a normal face mask, other types of face mask such as the "cone mask" by 3M, the "duckbill mask" by Kimberly Clark, and the "arch mask" by Alpha Pro Tech and other types of respiratory devices and respiratory protective devices.

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