

June 6, 2020

Moira Barton-Varty, RAC  
Senior Principal Regulatory Affairs  
Stryker Sustainability Solutions  
1810 West Drake Drive  
Tempe, AZ 8528

Dear Ms. Moira Barton-Varty:

On May 27, 2020, based on your<sup>1</sup> request, the U.S. Food and Drug Administration (FDA) issued an Emergency Use Authorization (EUA) for the emergency use of your product<sup>2</sup> for use in decontaminating compatible N95 respirators<sup>3</sup> for multiple-user reuse<sup>4</sup> by healthcare personnel (HCP)<sup>5</sup> to prevent exposure to pathogenic biological airborne particulates when there are insufficient supplies of face-filtering respirators (FFRs) resulting from the Coronavirus Disease 2019 (COVID-19) pandemic.

On June 6, 2020, FDA is reissuing the May 27, 2020 letter in order to revise the Scope of Authorization with respect to which compatible N95 respirators<sup>6</sup> this decontamination system is authorized to decontaminate in order to address public health and safety concerns regarding

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<sup>1</sup> For ease of reference, this letter will use the term “you” and related terms to refer to Stryker Sustainability Solutions (SSS).

<sup>2</sup> For ease of reference, this letter will use the term “your product” to refer to the SSS VHP N95 Respirator Decontamination System.

<sup>3</sup> In the May 27, 2020 letter “compatible N95 respirators” were defined as any N95 respirators that are non-cellulose containing respirators that are authorized in either the NIOSH-Approved Air Purifying Respirators EUA or are imported respirators that are authorized and identified in Exhibit 1 of the EUA for Imported, Non-NIOSH-Approved Disposable Filtering Facepiece Respirators, which are available at <https://www.fda.gov/emergency-preparedness-and-response/mcm-legal-regulatory-and-policy-framework/emergency-use-authorization>.

<sup>4</sup> Multiple-user reuse means that healthcare personnel may receive a different respirator following decontamination than the one they had previously used.

<sup>5</sup> HCP refers to all paid and unpaid persons serving in healthcare settings who have the potential for direct or indirect exposure to patients or infectious materials, including body substances (e.g., blood, tissue, and specific body fluids); contaminated medical supplies, devices, and equipment; contaminated environmental surfaces; or contaminated air. These HCP include, but are not limited to, emergency medical service personnel, nurses, nursing assistants, physicians, technicians, therapists, phlebotomists, pharmacists, dentists and dental hygienists, students and trainees, contractual staff not employed by the healthcare facility, and persons not directly involved in patient care, but who could be exposed to infectious agents that can be transmitted in the healthcare setting (e.g., clerical, dietary, environmental services, laundry, security, engineering and facilities management, administrative, billing, and volunteer personnel).

<sup>6</sup> For purposes of this EUA, “compatible N95 respirators” are non-cellulose containing respirators that do not have an exhalation valve that are either: (1) authorized in the NIOSH-Approved Air Purifying Respirators EUA; or (2) authorized and identified in Exhibit 1 of the EUA for Imported, Non-NIOSH-Approved Disposable Filtering Facepiece Respirators, which are available at <https://www.fda.gov/emergency-preparedness-and-response/mcm-legal-regulatory-and-policy-framework/emergency-use-authorization>.

certain respirators. Accordingly, this letter has been revised such that the SSS VHP N95 Respirator Decontamination System is no longer authorized to decontaminate authorized respirators that have exhalation valves. Having concluded that revising the May 27, 2020 letter is appropriate to protect the public health or safety under Section 564(g)(2)(C) of the Federal Food, Drug, and Cosmetic Act (the Act) (21 U.S.C. §360bbb-3(g)(2)(C)), FDA is reissuing the May 27, 2020 letter in its entirety with this revision<sup>7</sup> incorporated.

On February 4, 2020, pursuant to Section 564(b)(1)(C) of the Federal Food, Drug, and Cosmetic Act (the Act), the Secretary of the Department of Health and Human Services (HHS) determined that there is a public health emergency that has a significant potential to affect national security or the health and security of United States citizens living abroad, and that involves the virus that causes COVID-19.<sup>8</sup> Pursuant to Section 564 of the Act, and on the basis of such determination, the Secretary of HHS then declared on March 24, 2020, that circumstances exist justifying the authorization of emergency use of medical devices during the COVID-19 outbreak, subject to the terms of any authorization issued under that section.<sup>9</sup>

Your product has not been previously cleared or approved by FDA for any indication. Additionally, there are no FDA approved or cleared devices for decontaminating compatible N95 respirators, which are needed for use by HCP to prevent exposure to pathogenic biological airborne particulates during the COVID-19 pandemic. FDA has reviewed the totality of scientific evidence available, including: scientific literature and validation testing characterizing the effect of vaporous hydrogen peroxide (VHP) on compatible N95 respirators contaminated with viruses and the most difficult to kill bacterial spores; the effect of VHP on multiple types of microorganisms including the most difficult to kill bacterial spores; filtration efficiency and breathability testing following multiple decontamination cycles; biological indicator inactivation data for your product and decontamination process; testing regarding hydrogen peroxide residuals after decontamination; and fit testing for decontaminated, compatible N95 respirators.

Having concluded that the criteria for issuance of this authorization under Section 564(c) of the Act are met, I am authorizing the emergency use of the SSS VHP N95 Respirator Decontamination System, as described in the Scope of Authorization (Section II) and pursuant to the Conditions of Authorization (Section IV) of this letter.

## **I. Criteria for Issuance of Authorization**

I have concluded that the emergency use of SSS VHP N95 Respirator Decontamination System, as described in the Scope of Authorization (Section II) of this letter, meets the criteria for issuance of an authorization under Section 564(c) of the Act, because I have concluded that:

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<sup>7</sup> FDA is revising the May 27, 2020 letter to revise the Scope of Authorization (Section II) such that your decontamination system is no longer authorized to decontaminate authorized respirators that have an exhalation valve.

<sup>8</sup> U.S. Department of Health and Human Services, *Determination of a Public Health Emergency and Declaration that Circumstances Exist Justifying Authorizations Pursuant to Section 564(b) of the Federal Food, Drug, and Cosmetic Act*, 21 U.S.C. § 360bbb-3, 85 FR 7316 (February 7, 2020).

<sup>9</sup> U.S. Department of Health and Human Services, *Declaration that Circumstances Exist Justifying Authorizations Pursuant to Section 564(b) of the Federal Food, Drug, and Cosmetic Act*, 21 U.S.C. § 360bbb-3, 85 FR 17335 (March 27, 2020).

1. SARS-CoV-2, the virus that causes COVID-19, can cause a serious or life-threatening disease or condition, including severe respiratory illness, to humans infected by this virus;
2. Based on the totality of scientific evidence available to FDA, it is reasonable to believe that the SSS VHP N95 Respirator Decontamination System may be effective at decontaminating compatible N95 respirators for multiple-user reuse by HCP to prevent exposure to SARS-CoV-2 and other pathogenic biological airborne particulates, and that the known and potential benefits of this product, when used for such use, outweigh the known and potential risks of the use of such product; and
3. There is no adequate, approved, and available alternative to the emergency use of the SSS VHP N95 Respirator Decontamination System for decontamination of compatible N95 respirators to prevent exposure to SARS-CoV-2 and other pathogenic biological airborne particulates during FFR shortages during the COVID-19 pandemic.<sup>10,11</sup>

## **II. Scope of Authorization**

I have concluded, pursuant to Section 564(d)(1) of the Act, that the scope of this authorization is limited to the use of SSS VHP N95 Respirator Decontamination System, for use in decontaminating compatible N95 respirators that are contaminated or potentially contaminated with SARS-CoV-2 or other pathogenic microorganisms, for a maximum of three (3) decontamination cycles per respirator, for multiple-user reuse by HCP to prevent exposure to pathogenic biological airborne particulates during the COVID-19 pandemic.

### Authorized SSS VHP N95 Respirator Decontamination System

The SSS VHP N95 Respirator Decontamination System uses vapor hydrogen peroxide (VHP) for decontamination of compatible N95 respirators that are contaminated or potentially contaminated with SARS-CoV-2 or other pathogenic microorganisms. N95 respirators containing cellulose-based materials and respirators that have exhalation valves are incompatible with the SSS VHP N95 Respirator Decontamination System.

The SSS VHP N95 Respirator Decontamination System is operated by Stryker Sustainability Solutions personnel, and facilities are designed to allow adequate space for receiving, visual inspection for gross contamination or damage, VHP exposure, and packaging/labeling to minimize contamination and ensure orderly handling procedures. During this process, each

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<sup>10</sup> No other criteria of issuance have been prescribed by regulation under Section 564(c)(4) of the Act.

<sup>11</sup> There are not sufficient quantities of FFRs to meet the needs of the U.S. healthcare system. These disposable N95 respirators are an integral part of routine patient care. Due to shortages of N95 respirators, HCP may need to treat patients without personal protective equipment (PPE) or use a bandana or other less effective masks unless single-use N95 respirators can be decontaminated for reuse. Providing a method for decontaminating compatible N95 respirators reduces stress on the supply chain and helps meet the needs of the healthcare system. Providing HCP who are on the forefront of the COVID-19 response with FFRs is necessary in order to reduce the risk of illness in HCP and increase their availability to provide care to affected patients or those suspected of having COVID-19.

compatible N95 respirator will receive an indelible mark to designate the number of decontamination cycles, with a maximum of three (3) decontamination cycles per respirator.

The SSS VHP N95 Respirator Decontamination System is comprised of a STERIS VHP 1000ED Mobile Biodecontamination System utilizing a VHP sterilant within either a 200 ft<sup>2</sup> chamber that can accommodate a maximum of 20,000 respirators per decontamination cycle, or a 546 ft<sup>2</sup> chamber that can accommodate a maximum of 60,000 respirators per cycle. Compatible N95 respirators are placed on chrome racks and are distributed evenly throughout the chamber.

Each decontamination cycle proceeds through the following phases:

1. Dehumidification

Humidity is removed from the room space via an integrated desiccant system to ensure that a true, dry (i.e., below saturation/dew point levels) decontamination process is achieved. Desiccated air passes a dryer and then is heated to serve as the carrier for the VHP.

2. Conditioning

A VHP sterilant is rapidly injected and converted into a dry vapor that quickly raises the level of hydrogen peroxide to an effective concentration.

3. Decontamination

VHP concentrations are maintained at the target concentration level to provide an effective kill of microorganisms in the room space for 120 minutes.

4. Aeration

The generator stops injecting the VHP sterilant and accelerates the breakdown of vapor into water vapor and oxygen. Aeration continues until hydrogen peroxide is reduced to a level of <1 ppm. Aeration continues until hydrogen peroxide is reduced to an acceptable level and the room is commissioned for regular use.

Decontamination is confirmed with the use of chemical indicators (CI) that have been shown to effectively monitor the decontamination cycle. Decontaminated, compatible N95 respirators are then released via parametric release based on CI results. Decontaminated, compatible N95 respirators are packaged after VHP exposure. The decontaminated, compatible N95 respirator packages can maintain seal strength and package integrity under the stress of production, distribution, and handling. Decontaminated, compatible N95 respirators will have a label affixed in a manner that clarifies to the healthcare facilities that the enclosed respirators were decontaminated by Stryker Sustainability Solutions, and that Stryker Sustainability Solutions is not the original manufacturer of the respirators.

The above described product is authorized to be accompanied with the following product-specific information (that will be made available at <https://www.fda.gov/medical-devices/emergency-situations-medical-devices/emergency-use-authorizations>) pertaining to the emergency use, and is required to be made available to healthcare providers and healthcare facilities, respectively:

- Instructions for Healthcare Personnel & Facilities: Preparation of Compatible N95 Respirators for Decontamination by Stryker Sustainability Solutions; and
- Collect and Ship Protocol of N95 Respirators.

In addition, following decontamination, compatible N95 respirators decontaminated by the SSS VHP N95 Respirator Decontamination System must be accompanied by the following information upon shipment of respirators to a healthcare facility:

- Fact Sheet for Healthcare Personnel: Stryker Sustainability Solutions Decontamination System for Decontaminating Compatible N95 Respirators.

The Fact Sheet for Healthcare Personnel, Instructions for Healthcare Personnel & Facilities, and Collect and Ship Protocol of N95 Respirators are collectively referred to as “authorized labeling.” The above described product, when accompanied with the described labeling is authorized to be distributed to and administered under this EUA, despite the fact that it does not meet certain requirements otherwise required by applicable federal law.

I have concluded, pursuant to Section 564(d)(2) of the Act, that it is reasonable to believe that the known and potential benefits of the SSS VHP N95 Respirator Decontamination System, when used and labeled consistently with the Scope of Authorization of this letter (Section II), outweigh the known and potential risks of such product.

I have concluded, pursuant to Section 564(d)(3) of the Act, based on the totality of scientific evidence available to FDA, that it is reasonable to believe that the SSS VHP N95 Respirator Decontamination System may be effective at decontaminating compatible N95 respirators for multiple-user reuse by HCP to prevent exposure to pathogenic biological airborne particulates during FFR shortages during the COVID-19 pandemic, when used consistently with the Scope of Authorization (Section II) of this letter, pursuant to Section 564(c)(2)(A) of the Act.

FDA has reviewed the scientific information available to FDA, including the information supporting the conclusions described in Section I of this letter, and concludes that the SSS VHP N95 Respirator Decontamination System (as described in the Scope of Authorization (Section II)), meets the criteria set forth in Section 564(c) of the Act concerning safety and potential effectiveness.

The emergency use of the SSS VHP N95 Respirator Decontamination System must be consistent with, and may not exceed, the terms of this letter, including the Scope of Authorization (Section II) and the Conditions of Authorization (Section IV). Subject to the terms and conditions of this EUA and under the circumstances set forth in the Secretary of HHS’s determination under Section 564(b)(1)(C) described above and the Secretary of HHS’s corresponding declaration under Section 564(b)(1), the SSS VHP N95 Respirator Decontamination System is authorized for emergency use, as described in the Scope of Authorization (Section II).

### **III. Waiver of Certain FDA Requirements**

Pursuant to Section 564(e)(3) of the Act, with respect to the emergency use of a product for which an authorization under this section is issued, FDA may waive or limit, to the extent appropriate given the circumstances of the emergency, requirements regarding good manufacturing practice otherwise applicable to the manufacture, processing, packing, or holding of products subject to regulations under this Act, including such requirements established under sections 520(f)(1). FDA grants that waiver, including the quality system requirements under 21 CFR Part 820.

### **IV. Conditions of Authorization**

Pursuant to Section 564(e) of the Act, I am establishing the following conditions on this authorization:

#### Stryker Sustainability Solutions

- A. Stryker Sustainability Solutions must comply with the labeling requirements under 21 CFR 801 Subpart A (general labeling provisions), as well as those described in Section II of this letter, the Scope of Authorization.
- B. Stryker Sustainability Solutions must provide to all healthcare facility customers the authorized labeling before the decontamination process begins.
- C. Stryker Sustainability Solutions must notify all healthcare facility customers about the conditions of this authorization applicable to healthcare facilities before the decontamination process begins.
- D. Stryker Sustainability Solutions may make changes to the process, procedures, and/or labeling for the authorized product, upon request and subject to review and concurrence of the Division of Infection Control and Plastic and Reconstructive Surgery/Office of Product Evaluation and Quality (OPEQ)/Center for Devices and Radiological Health (CDRH).
- E. Stryker Sustainability Solutions may make changes to the scope of this EUA, upon request and subject to review and concurrence of the Division of Infection Control and Plastic and Reconstructive Surgery/OPEQ/CDRH and the Office of Counterterrorism and Emerging Threats (OCET)/Office of Chief Scientist (OCS)/Office of the Commissioner (OC).
- F. Use of the SSS VHP N95 Respirator Decontamination System on other types of personal protective equipment is not authorized and would require a request for a separate EUA or marketing authorization and data supporting such other use.
- G. Stryker Sustainability Solutions will have a process in place to report adverse events of which they become aware to FDA related to the SSS VHP N95 Respirator Decontamination System and compatible N95 respirators that have undergone decontamination using the SSS VHP

N95 Respirator Decontamination System (“the decontaminated, compatible N95 respirators”) in accordance with 21 CFR Part 803. This includes reports concerning infection or potential infection of Stryker Sustainability Solutions personnel involved in the use of SSS VHP N95 Respirator Decontamination System based on routine fever monitoring and testing for SARS-CoV-2 (subject to availability of diagnostic tests) and users of the decontaminated, compatible N95 respirators. Records of routine fever monitoring and testing for SARS-CoV-2 shall be maintained by Stryker Sustainability Solutions.

- H. Stryker Sustainability Solutions will have a process in place to collect information on the performance of the SSS VHP N95 Respirator Decontamination System, including information regarding degradation of decontaminated, compatible N95 respirators, and evaluate this information to determine if adverse event reporting in accordance with 21 CFR Part 803 is warranted.
- I. Stryker Sustainability Solutions will ensure that any records associated with this EUA are maintained until otherwise notified by FDA. Such records will be made available to FDA for inspection upon request.
- J. Stryker Sustainability Solutions is authorized to make available additional information relating to the emergency use of the product that is consistent with, and does not exceed, the terms of this letter of authorization.
- K. Stryker Sustainability Solutions must inspect the compatible N95 respirators upon receipt from the healthcare facilities for visible evidence of soil or damage. If there is any discoloration, any signs of soiling, or other signs of degradation, the compatible N95 respirator must not be decontaminated, and Stryker Sustainability Solutions shall discard the respirator.
- L. Stryker Sustainability Solutions will maintain records of the chain of custody of the compatible N95 respirators sent to Stryker Sustainability Solutions for decontamination through use of a barcode system and tracking database.
- M. Stryker Sustainability Solutions will track the number of times a compatible N95 respirator is decontaminated up to a maximum number of three decontamination cycles per compatible N95 respirator. Stryker Sustainability Solutions will maintain records of all decontamination cycles.
- N. Stryker Sustainability Solutions is authorized to decontaminate a maximum of 20,000 respirators per decontamination cycle in the 200 ft<sup>2</sup> chamber and a maximum of 60,000 respirators per decontamination cycle in the 546 ft<sup>2</sup> chamber.
- O. Stryker Sustainability Solutions must use chemical indicators to confirm that decontamination cycles have been effectively conducted. Stryker Sustainability Solutions is authorized to release decontaminated, compatible N95 respirators by parametric release based on chemical indicators.

Healthcare Facilities

- P. Healthcare facilities shall make available to HCP who are or may be using the decontaminated, compatible N95 respirators the authorized Fact Sheet for Healthcare Personnel and Instructions for Healthcare Personnel & Facilities that is required to be provided by Stryker Sustainability Solutions.
- Q. Healthcare facilities will have a process in place to report adverse events of which they become aware related to the decontaminated, compatible N95 respirators in accordance with 21 CFR Part 803. This includes monitoring HCP using the decontaminated, compatible N95 respirators for signs and symptoms of potential infection with SARS-CoV-2 or other respiratory infection and reporting such infections.
- R. Healthcare facilities using the decontaminated, compatible N95 respirators must inspect the decontaminated, compatible N95 respirators. Any discoloration or other signs of degradation with a decontaminated, compatible N95 respirator shall promptly be reported to Stryker Sustainability Solutions, and the healthcare facility must discard the respirator.

Conditions Related to Printed Materials, Advertising and Promotion

- S. All descriptive printed matter, including advertising and promotional materials, relating to the use of your product shall be consistent with the authorized labeling, as well as the terms set forth in this EUA and the applicable requirements set forth in the Act and FDA regulations.
- T. No descriptive printed matter, including advertising or promotional materials, relating to the use of your product may represent or suggest that such products are safe or effective for the decontamination of compatible N95 respirators for multiple-user reuse by HCP to prevent exposure to pathogenic biological airborne particulates.
- U. All descriptive printed matter, including advertising and promotional materials, relating to the use of your product clearly and conspicuously shall state that:
- the SSS VHP N95 Respirator Decontamination System has neither been cleared or approved for the decontamination of compatible N95 respirators for multiple-user reuse by HCP to prevent exposure to SARS-CoV-2 and other pathogenic biological airborne particulates;
  - the SSS VHP N95 Respirator Decontamination System has been authorized by FDA under an EUA;
  - the SSS VHP N95 Respirator Decontamination System is authorized only for the duration of the declaration that circumstances exist justifying the authorization of the emergency use of medical devices during the COVID-19 outbreak, under Section 564(b)(1) of the Act, 21 U.S.C. § 360bbb-3(b)(1), unless the authorization is terminated or revoked sooner.



**V. Duration of Authorization**

This EUA will be effective until the declaration that circumstances exist justifying this authorization terminated under Section 564(b)(2) of the Act or the EUA is revoked under Section 564(g) of the Act.

Sincerely,

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RADM Denise M. Hinton  
Chief Scientist  
Food and Drug Administration

Enclosures