

# **National Institute for Occupational Safety and Health (NIOSH) Respiratory Health of Healthcare Workers Survey: Results of cognitive interviews conducted March—May, 2013**

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## **1. Introduction**

This report summarizes the findings from a research project designed to evaluate the Respiratory Health of Healthcare Workers Questionnaire for the National Institute of Occupational Safety and Health (NIOSH). The Respiratory Health of Healthcare Workers Questionnaire is part of a new study commissioned by NIOSH to identify modifiable occupational risk factors for asthma in healthcare that will inform strategies for prevention. This evaluation is based on 13 cognitive interviews that were conducted by the Questionnaire Design Research Laboratory (QDRL) at the National Center for Health Statistics (NCHS). Cognitive interviewing is a qualitative question evaluation method used to evaluate the validity of survey questions (Willis 2005; Miller 2011). The main goals of the project were to: 1) assess respondents' interpretation of the survey questions, 2) identify any potential question response problems that could lead to response error in the survey data, and 3) identify any usability issues with the self-administered web questionnaire. The following report summarizes the cognitive interviewing methodology and describes how data analysis was conducted. An overview of the findings is then presented, followed by a question by question review of the findings.

## **2. Methodology**

### *Sampling and Respondent Characteristics*

Testing took place in March, April and May of 2013, and included a total of 13 interviews.

Respondents were selected using a purposive sample. The goal of a purposive sample is *not* to obtain a statistically representative sample. Instead, the goal is to arrive at a complete understanding of the patterns of interpretation that are elicited by each item in the survey. This is achieved first by aiming for diversity in the sample (in terms of healthcare profession diversity and supervisory/managerial position) and then by targeting respondents who help us explore

relevant issues that emerge in the course of data collection. In order to participate in the evaluation, each respondent had to be employed as a central supply or central sterilization worker, a dental assistant, a housekeeper or janitor, a laboratory technician, an operating room technician, or a respiratory therapist or technician working at a hospital or nursing home. Respondents were recruited through craigslist advertisements, through state and national professional associations, and through word of mouth. Prior to participation, respondents were screened over the telephone in order to confirm that they met these criteria for inclusion.

Table 1: Respondent Characteristics

<u>Type</u>	<u>Total</u>	<u>Percentage</u>
<u>Supervisory Status</u>		
Manager/Supervisor	4	31%
Not a Manager/Supervisor	11	69%
<u>Healthcare Profession</u>		
Central Supply/Sterile	4	31%
Dental Assistant	2	15%
Laboratory Assistant	1	8%
Operating Room Technician	1	8%
Respiratory Therapist/Technician	5	38%

All interviews but one were conducted off-site and not at the NCHS lab. Most took place at the respondent’s workplace, but two interviews were conducted at a quiet coffee shop chosen by the respondent. Prior to beginning the interview, respondents filled out paperwork agreeing to be audio-taped. The interviewer then explained the purpose of NCHS, described the study, and told respondents the manner in which the interview would be conducted. Interviews were designed to last 60 minutes and a \$50 token of appreciation was given to respondents at the conclusion of the interview.

*Data Collection*

Cognitive interviewing, as a qualitative methodology, offers the ability to understand the interpretive process respondents go through in order complete the NIOSH Respiratory Health of Healthcare Workers survey. It is a method that allows the researcher to uncover respondents’ interpretations of items on the form and note where response error may have occurred. The Respiratory Health of Healthcare Workers survey is designed as a self-administered web instrument. While its field version will be hosted on NIOSH’s public internet, the test version was hosted on the agency’s internal development site, and was accessed by the interviewer via the CDC Citgo web portal. The respondents sat at a laptop computer to take the survey while the interviewer sat next to them in order to observe their on-screen movements and actions. As the respondent proceeded through the questionnaire, the interviewer asked concurrent follow-up questions (i.e., probes) designed to reveal respondents’ interpretation of each item and any problems they had in arriving at an understanding and/or an answer. The interviewer also noted any difficulties – either observed by the interviewer or reported by the respondent – with questionnaire layout and format. In a one-hour interview, there was not time to explore all questions on the form. As a result, probes were asked only of major questions (i.e. 51.6), and sub-questions (i.e. 51.6.1) were only probed as a result of an apparent response error.

## Method of Analysis

Data analysis proceeded according to the grounded theory approach (see Glaser and Strauss 1967), which does not aim to test existing hypotheses, but instead generates explanations of how respondents complete the survey questionnaire and understand its questions. The process of analysis is a constant comparison of data in several steps. The first step occurs within the interview as the interviewer attempts to understand how one respondent has come to understand and answer each item on the questionnaire. Response error is identified in this stage of analysis. This level of analysis is illustrated through the use of respondent examples and quotes in the results section. The examples are designed to give readers a sample of how individual respondents understood and answered a question.

The second step in analysis occurs once the interview is over, and is a systematic comparison across *all* interviews. This level of comparative analysis reveals patterns in the way respondents complete the survey and understand the questions. It also identifies common difficulties with question interpretation and explanations for response error. This level of analysis is demonstrated not so much with specific examples, but with a discussion of the general patterns of interpretation that occur across multiple respondents.

The third level of analysis explores whether various patterns of interpretation (and response error) are more likely among certain groups of respondents, such as supervisors versus non-supervisors or between different professions such as central supply workers versus dental assistants.

The next section discusses results of the study in two parts. The first part begins with a discussion of overall findings from across the questionnaire. These themes are not explanations of how one question in particular functions, but rather, the themes identify patterns of interpretation that are prevalent throughout the instrument and among multiple questions. The second part is a detailed question-by-question account of how respondents interpreted specific items.

## 3. Results

### General Findings

A number of general patterns of interpretation emerged across the questionnaire from the cognitive interviewing data. The most prominent of these are 1) the way that respondents used specific examples to answer questions, 2) how respondents interpreted and answered questions about the number and duration of tasks in a given period, and 3) general confusion over whether the survey questions were asking about actions in the household, workplace, or both.

*Response via Examples:* Throughout the questionnaire, but particularly on “list” questions such as Question 51.1 that provide a “yes”/”no”/”don’t know” answer category set, respondents

tended to latch onto the examples given in the sub-questions and based their answer on whether or not they recognized the item. A previous round of cognitive interviewing on this survey (Ridolfo 2012) tested a version of the questionnaire where these “list” questions were presented instead as fill-in-the-blank questions. Ridolfo (2012) noted that respondents could not remember the brand or chemical names of the compounds with which they worked, and thus had difficulty answering these fill-in-the-blank questions. NIOSH included the examples in this round’s version of the questionnaire in an effort to address this previous finding. While the incidence of “don’t know” responses and missing items appeared to decrease with this new format, providing examples has an observable framing effecting. Additionally, in this round of testing there was a clear divide between how supervisors/managers—who tended to know the specific chemical names (such as “phenolics” and “quaternary ammonium compounds”)—and the non-supervisors who knew the brand names (such as “wexcide” and “sani-cloths”) responded to these types of questions. Besides relying on the brand names, non-supervisors also tended to answer “no” instead of “don’t know” if they did not recognize a brand in a sub-question. This pattern of interpretation has the potential to increase the number of false negative (or even some false positive; see Question 51.1) answers across the questionnaire.

*Number and Duration of Tasks:* Across the entire cognitive interviewing sample, the number and duration of tasks questions (i.e. Question 51.2 and 51.3) both consistently caused the most confusion and elicited the widest range of interpretations by the respondents. When considering a task such as using a sani-cloth to wipe a respirator, some respondents counted each wipe as a “time;” others counted cleaning each respirator as a “time;” while still others counted the number of rooms that had respirators for which they were responsible regardless of the number of times they actually cleaned the machine. As duration—the amount of time a respondent spent on a task, usually asked over a period of a day—is logically based on how often an action is accomplished in that time period, the wide variation in the interpretation of “times” led to an even wider variation in the interpretation of duration.

In addition to this linkage between the constructs, the interpretation of duration was further muddled by the fact that some of these tasks took only seconds to accomplish (viz. wiping cleaning a stethoscope, using spray deodorant/disinfectant, and removing gross contaminants from an instrument by flushing). Since each individual action is so short, respondents had a difficult time aggregating this time up to a measurement of hours a day.

*Workplace versus Household Setting:* Throughout the sterilizing and cleaning sections (Questions 48 through 51.1.6), a number of respondents expressed confusion over whether they should be answering the questions about their workplace, their home, or both. There appear to be two sources for this confusion. First, the tested version of the questionnaire starts with a number of questions about the respondents’ homes and the chemicals and potential respiratory problems found therein, and then transitions to employment questions and the sterilizing and cleaning sections. Second, the items on the list questions in the sterilization and cleaning sections (Questions 50.1, 51.1, and 51.5) all include items that only janitorial or housekeeping staff would consider to be work-based (i.e. making beds, cleaning bathrooms, using Windex, etc). Non-janitorial or housekeeping staff tended to interpret these items as home-based activities. The combination of these two framing effects—the placement of the home section at the beginning of the questionnaire and the mix of items in the list questions—led a number of respondents to

believe that they were supposed to answer about their lives away from the medical workplace in the sterilization and cleaning sections. This pattern of interpretation did not continue; however, into the profession-specific sections.

### *Usability*

Besides the three major patterns of interpretation noted above, there were a number of other less prominent issues that caused confusion or diversity in interpretations that might decrease item validity. These are catalogued in the question-by-question section below. One final cross-questionnaire pattern to note in this section is the overall usability of the instrument. Please note that the questionnaire was tested using a Dell laptop running Windows Server 2008 and Internet Explorer. Overall, the respondents had no trouble reading the questions on the web instrument, and were generally able to select the answers they wanted. One potential source of usability-based response error was the proximity of some answer choices when presented in a row. For instance, Question 34 asks respondents about their exposure to chemicals and gas:

**Accidental Chemical Spill or Gas Release**

34 Were you ever involved in or near an accidental chemical spill or gas release? \*

No  Yes  Don't Know

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A number of respondents checked the “yes” radio button when meaning to answer “no” or the “don’t know” when meaning to answer “yes.”

One other usability issue was how some of the longer questions were displayed on the screen. For instance, Question 41 asks about the physical location of one’s job:

41 Where do you work in the facility? Please mark the single best answer.\*

- Administration
- Central supply
- Dental
- Dialysis
- Ear, nose, and throat (ENT)
- Education
- Emergency room (ER)
- Endoscopy
- Float or multiple locations
- General or internal medicine
- Intensive care
- Labor and delivery
- Laboratory, medical or clinical
- Non-patient care area
- Outpatient care
- Patient care ward
- Pediatric
- Psychiatric
- Pulmonary
- Surgery or operating room
- Other location, please specify

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45.79%

On the tested version of the questionnaire, the answer choices below “Non-patient care area” could only be seen after scrolling down. A number of respondents attempted to fit their job into one of the first 14 options that they saw, and only realized that there were more options when they scrolled down to move to the next page.

## Question-by-Question Analysis

Note that the both the cognitive interview for this round, as well as the following question-by-question analysis, start with Question 30 on the survey questionnaire. Questions 1 through 29 were not tested.

## Questions 30 and 31

**HOME**

**30 In the last 12 months, have you observed any of the following in your house or apartment?**

**Water leakage or water damage indoors on walls, floors, or ceilings?**

No  Yes  Don't Know

**Visible mold growth (not on food) indoors on walls, floors, or ceilings?**

No  Yes  Don't Know

**Odor of mold or mildew (not from food)?**

No  Yes  Don't Know

**31 In the last 12 months, have there been any renovations or construction in your house or apartment?**

No  Yes  Don't Know

### *Reference Period*

Most respondents said they interpreted “in the last 12 months” to be from the month of the interview last year—i.e. last April—to the time of the interview. However, that interpretation seems to be mostly with people who answered “no” to the items. Respondents who said “yes” tended to be thinking about a specific event, such as a flood or a renovation, many of which occurred in the last few months. By this logic, there could be a number of false negatives if the respondent didn’t recall a very recent major event. This could particularly be the case with renters, as many of the respondents who spoke of an even recalled having to pay to fix the water damage or pay for the construction.

### *Question Construct and Interpretations*

The interpretations of the base constructs appeared very even across the respondents. Most respondent who mentioned water leakage were thinking about either a flood or a machine (i.e. water heater) malfunction. Likewise, most respondents took “renovations or construction” in a very broad sense, with one respondent counting the instillation of her wall-mounted television as a renovation.

## Question 32

**32 In the last 12 months, how often have you personally cleaned your own home?**

Never  Less than 1 day per week  1-2 days per week  3-4 days per week  5-7 days per week

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39.25%

### Reference Period

The respondents appeared to not pay attention to the reference period of “the last 12 months” and instead treated the questions as if it was asking, “on average.” In explaining their answers, many respondents talked through a few weeks of cleaning to arrive at the final answer category.

### Question Construct and Interpretations

The respondents’ interpretations of the core construct of “cleaning” varied, mostly along two dimensions: activities and completeness. The activities that respondents reported thinking about when considering the concept of “cleaning” ranged from vacuuming to straightening up to using household chemicals. Interestingly, many respondents did not consider doing the laundry to be cleaning, and tended to only think about spray bleach use in Q33.

The other dimension of interpretation dealt with the completeness of the cleaning—i.e. how much of the activity had to be done for it to “count” as a cleaning. A number of respondents said that they only considered cleaning the whole house towards their answer, while others counted partial-house cleaning. Within this latter interpretation, a number of respondents reported thinking about cleaning particular areas, such as the bathroom or kitchen, when considering their answer.

Beyond these two dimensions, a third variation in the interpretation of this question surrounded the word “personally.” While it appeared that most respondents were only considering their actions, a few respondents either talked in the third-person plural or explicitly mentioned family members when considering their answers.

## Question 33

33 In the last 12 months, on how many days a week have you used the following cleaning products in your own home? Mark the single best answer for each cleaning product.

Any spray cleaning product

Never  Less than 1 day per week  1-2 days per week  3-4 days per week  5-7 days per week

Bleach, like Clorox®

Never  Less than 1 day per week  1-2 days per week  3-4 days per week  5-7 days per week

Ammonia products, like Mr. Clean Top Job®

Never  Less than 1 day per week  1-2 days per week  3-4 days per week  5-7 days per week

Window cleaners, like Windex®

Never  Less than 1 day per week  1-2 days per week  3-4 days per week  5-7 days per week

Air freshening sprays, like Febreze® or Glade®?

Never  Less than 1 day per week  1-2 days per week  3-4 days per week  5-7 days per week

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All respondents screened into this question.

### *Reference Period*

Respondents carried over their reference periods from Q32 into Q33, and again appeared to be searching for an average of the last few weeks, instead of considering a whole year.

### *Question Construct and Interpretations*

- *Any Spray Cleaning Product:* Most respondents interpreted this question to be asking about products that were also asked about later, specifically spray Clorox bleach, window cleaner, and ammonium-based kitchen and bathroom sprays.
- *Bleach:* As mentioned above, only a few respondents interpreted this question as asking about laundry bleach. Most were considering spray bleach products used in the bathroom and on kitchen counters. This could be due to the fact that the first question in this set (any spray cleaning product) frames the question to be about sprays exclusively.
- *Ammonium:* The respondents reported using the products given in the examples, particularly Mr. Clean. One respondent reported using Mr. Clean Magic Eraser, but did not count the product (even though the respondent thought it contained ammonium) “because it wasn’t a spray.” Again, this is probably due to the framing mentioned above.
- *Window cleaner:* Respondents reported using the products given in the examples, and often referred to it by the brand name (Windex) only.
- *Air Freshener:* There was some variation to the interpretation of this question. First of all, most respondents understood this question to be asking about air freshener products used throughout the house, including the bathroom. However, a few respondents who answered no later confirmed that they used it in the bathroom, but did not consider it a cleaning product or spray, so they did not count that use towards their answer. This could again be due to the framing issue noted above. A few respondents additionally noted that they had automatic air freshening systems, and were unsure whether they were supposed to consider those as part of the question.

## Question 34

**Accidental Chemical Spill or Gas Release**

34 Were you ever involved in or near an accidental chemical spill or gas release? \*

No  Yes  Don't Know

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### *Reference Period*

Respondents all appeared to understand this question as asking about their whole life.

### *Question Construct and Interpretations*

The respondents' interpretations of this question varied across two major dimensions: question scope and event severity. The dimension of "scope" refers to the social sphere within which the respondent was considering when approaching this question—either home, work, or both. A majority of the respondents were considering only their "work lives," and not their experiences outside of the medical workplace. There is no obvious framing that would lead to this (in fact, the previous questions ask explicitly about home, so one might expect the opposite frame to influence the interpretations more). A few respondents said that they were mostly considering the "home" (which appeared to be a gloss for non-work) environment. This interpretation was particularly pronounced when the respondent reported thinking about "gas," which most respondents took to mean natural gas used to heat the home and as a cooking fuel. Additionally a few respondents did report thinking about both their in-work and out-of-work lives when considering this question.

In terms of severity, the respondents were split on whether this question was asking about major or severe chemical spills or about all spills, regardless of their size or severity. In general, people whose interpretations of the scope were limited to work reported to be thinking mostly about major spills, whereas those respondents who also considered their out-of-work lives thought about both major and minor (i.e. household cleaner) spills.

Among the respondents who answered yes to this question (n=4), they were split between thinking about a single event, such as a one respondent who mentioned that he had been splashed with bleach at the grocery store, and thinking about continuous events, such as another respondent who mentioned that he occasionally smells natural gas at or near his house.

## **Questions 34.1 through 34.5.1**

34.1 In what year did the most recent accidental chemical spill or gas release occur?

Year:

34.2 Where did this most recent accidental chemical spill or gas release occur?

Home  Work  Elsewhere

34.3 What were you exposed to? *Please write in answer.*

34.4 Did you have to receive medical attention because of the most recent accidental exposure?

No  Yes  Don't Know

34.5 In the first 24 hours following the most recent accidental exposure, did you experience any respiratory symptoms such as shortness of breath, wheezing, cough, or tightness in your chest? \*

No  Yes  Don't Know

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42.06%

34.5.1 When you experienced respiratory symptoms in the first 24 hours following the most recent accidental chemical spill or gas release, how long did these symptoms last?

*Please mark the single best answer.*

- Less than 1 week  
 1 week to 1 month  
 More than 1 month but less than 3 months  
 3 months or longer  
 Don't know

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42.99%

Four respondents screened into these questions.

### *Reference Period:*

As noted above, the interpretation of Q34 led some respondents to consider a series of exposures and others to consider only one incident. However, in the two cases where respondents were thinking of a series of incidents in 34, they appeared to only consider the most recent for Q34's sub-questions, as directed by the questions' texts.

### *Question Construct and Interpretations*

There was no observable variation in the interpretation of the questions across the respondents. Respondents were able to relate the chemical or chemicals to which they were exposed in Q34.3. However, since there were no guides as to the level of specificity, the answers ranged from particularly compounds (ethylene oxide) to classes of compounds (chemo chemicals).

## Questions 35 through 37

**Employment History**

**History of Healthcare Work**

35 Please record the age when you started working in healthcare OR the age you began as a healthcare student, whichever was earlier.

Years old

36 How many total years have you worked in healthcare? (Include years you were a healthcare student.)

Total years

**Current Employment**

*If you have more than one current job, record information for the job where you work the most hours per week.*

37 What is the name of hospital, nursing home or other facility where you currently work:

### *Reference Period*

Questions 35 and 36 provided no reference periods, and the respondents all considered their whole life histories when answering these questions. The reference of “currently” in Question 37 prompted all the respondents to think about their jobs at the moment of the interview. This interpretation could have been impacted by the fact that all the respondents were sampled through or because of their current jobs.

### *Question Construct and Interpretations*

The variation in interpretation of Q35 was a result of respondents being unsure what jobs to consider when answering. Most respondents appeared to find the written instructions of “working in healthcare” or “healthcare student” to be clear, but some respondents who had previously held jobs in fields ancillary to healthcare were unsure whether or not to include these.

For instance, one respondent worked in food service at a nursing home, and another worked in a veterinary hospital.

Once the respondent made a decision on what jobs to consider in Q35, there was no variation in the core interpretation of Q36. Respondents used a variety of methods to calculate the answer, from counting down from the current year, to simple subtraction, to using milestones such as birthdays in a job.

There was no observable variation in interpretation to Question 37. Some respondents reported holding multiple current jobs in healthcare, but all of these respondents found the instruction to only count the one where they work the most hours to be clear.

## Question 38

38 In which borough of New York City or nearby city is the hospital, nursing home, or other facility where you currently work:

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All the respondents skipped this question on the instruction of the interviewer, as all of the respondents were sampled from outside the New York City area.

## Question 39

39 What is your *current* occupation?\*

- Dental assistant
- Environmental service worker, housekeeper, or cleaner
- Lab technician, lab technologist, or assistant in a medical or clinical laboratory
- Licensed practical nurse (LPN) or licensed vocational nurse (LVN)
- Medical instrument preparer, central supply worker, or endoscopy technician
- Nursing assistant, nurse technician, nurse support assistant, patient care technician, patient support, or orderly
- Operating room technician
- Registered nurse (RN)
- Respiratory therapist or respiratory technician
- Other, please specify

### *Reference Period*

As above, the reference of “currently” in the question text prompted all the respondents to think about their jobs at the moment of the interview.

### *Question Construct and Interpretations*

Respondents who worked in central supply noted that there was some ambiguity in their occupation. The two central supply managers put registered nurse down, because they believed it was a better fit than environmental services. Two other respondents from central supply were not registered nurses, and put environmental services down as their occupation, though they referred to themselves as something else (one, a “janitorial cleaner” and the other, a “unit supply clerk”). For the other respondents, their occupations and their jobs were closely aligned, and the interpretation of this question appeared consistent. Since the respondents for this study were sampled based on their occupation, this lack of variation is to be expected.

## **Question 40**

40 In what type of facility do you *currently* work?\*

Hospital

Nursing home

Both hospital and nursing home

Other, please specify

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### *Reference Period*

As above, the reference of “currently” in the question text prompted all the respondents to think about their jobs at the moment of the interview.

### *Question Construct and Interpretations*

This question was not probed extensively. However, there was no observable variation in interpretation across the sample, with the constraints provided by the answer categories. Due to sampling, some respondents—particularly dental assistants—had to choose the “other” category, as they worked at neither a hospital nor nursing home. Two respondents worked at both hospitals and nursing homes, though they only answered “hospital” to this question, following the instructions at the beginning of the section.

## Question 41

**41** Where do you work in the facility? Please mark the single best answer.\*

- Administration
- Central supply
- Dental
- Dialysis
- Ear, nose, and throat (ENT)
- Education
- Emergency room (ER)
- Endoscopy
- Float or multiple locations
- General or internal medicine
- Intensive care
- Labor and delivery
- Laboratory, medical or clinical
- Non-patient care area
- Outpatient care
- Patient care ward
- Pediatric
- Psychiatric
- Pulmonary
- Surgery or operating room
- Other location, please specify

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### *Reference Period*

The respondents all appeared to carry the reference period forward from Q40, as Question 41 was asking about the same job.

### *Question Construct and Interpretations*

There was no observable variation in the interpretation of this question across the sample. All respondents understood that this question was asking about the area in the hospital where they

worked. However, many respondents did note that choosing one location was difficult. For instance, all the respondents who were managers listed their location as “administration,” but pointed out that they worked in their departments (central supply or pulmonary for instance). Non-supervisory workers also noted that they worked multiple places. For instance, a respiratory technician may work primarily in the intensive care unit, but also work in general care and pulmonary. A few respiratory technicians also pointed out that pulmonary was a narrow category, and that they would prefer it was broadened to include respiratory (the distinction being, according to the respiratory technicians, that pulmonary was for diagnostics and respiratory was for treatment).

Respondents who indicated that they worked in multiple places indicated that they either did not see the “float or multiple locations” option, or that they did see it but decided that a particular location best answered the question.

## Questions 42 and 43

42 How many hours do you typically work per week in your *current* job?

Hours per week

43 What year did you begin your *current* job?

Year:

### *Reference Period*

As above, the reference of “currently” in Questions 42 and 43’s text prompted all the respondents to think about their jobs at the moment of the interview.

### *Question Construct and Interpretations*

In Q42, two minor variants of interpretation emerge. Some respondents answered the number of hours they actually worked on an average or typical week, while others provided what appeared to be only their scheduled hours. The extent of this potential under-estimate (assuming that the number of hours truly worked is higher than the number scheduled) is unknown, as the question was not probed extensively due to time constraints.

There was little observable variation in the interpretation of Q43 across the sample, with nearly all the respondents reporting that they understood the question to refer to their current position or set of responsibilities. One respondent however counted the full time she had been employed full time at her current hospital, even though she had held various positions during that time.



## Question 44

44 In this job, are you regularly exposed to vapors, gases, dusts, or fumes?\*

No  Yes  Don't Know

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### *Reference Period*

The respondents all appeared to carry the reference period forward from Q43, as Question 44 was asking about the same job.

### *Question Construct and Interpretations*

Two major interpretations of this question emerged, specifically focusing on the core construct of exposure. A number of respondents interpreted this question as asking about the potential risks of exposure to the stated substances in their work environments. This pattern ranged from knowing that chemicals were in the area, but not breathing them in, to knowing that some chemicals were probably in the air, but not being sure if and when they were actually breathed in. For instance, a lab technician reported:

We run anesthesia. So there's always that risk. I'm not in the room all the time, when it's being run. But I might be in there putting stuff away. So I'm trying to figure out if that counts.

When asked what he was thinking in regards to “exposed” a central supply worker noted:

This is tough. Well, primarily just in regards to the department itself. We do decontamination and stylization. So the steam sterilization—no big deal. But the low temp, we use hydrogen peroxide. And in the last year...well actually I just spoke with a guy about an article the other day. Just like with ethylene oxide, where OSHA put in place some monitoring about airborne exposure, they are finding the same thing to be true with H<sub>2</sub>O<sub>2</sub>. So, about 8 years too late! Thanks! So I'm scratching my head. We don't have a [ventilation] system set up there yet. We did when we used ETO, but that got pulled out, because we haven't used ETO in 15 years. So it's kind of question, where I'm thinking, LOGICALLY, there's probably something there, but I don't know.

The other major interpretation of this question was that it was asking about *known, point* exposure. IN this interpretation, a respondent would only say yes if they knew for a fact that they were breathing in one of the specified compounds. In this case, the respondents could explain exactly what procedure they were thinking about and whether or not they would breathe a compound in. For example, a dental assistant noted that she breathed in fumes during root canal procedures.

As they were answering this question, many respondents appeared to consider each of the four specified compounds separately. For instance, they would consider vapors first and determine

the answer, then move on to gases, then to dusts and fumes. In this way, the question functioned as a quadruple-barreled question.

## Question 44.1

44.1 To what vapors, gases, dusts, or fumes are you exposed regularly? *Please write in answer.*

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Nine respondents screened into this question.

### *Reference Period*

All the respondents carried the reference period forward from Q44, as Question 44.1 was asking about the same job.

### *Question Construct and Interpretations*

There was no observable variation in the interpretation of the questions across the respondents. Respondents were able to generally relate the chemical or chemicals to which they were exposed in Q44, though in many cases without much specificity (i.e. “dust” or “floor cleaning chemical”).

## Questions 45 and 46

45 In the last 12 months, did you observed any of the following in the area(s) where you work?

Water leakage or water damage indoors on walls, floors, or ceilings?

No  Yes  Don't Know

Visible mold growth (not on food) indoors on walls, floors, or ceilings?

No  Yes  Don't Know

Odor of mold or mildew (not from food)?

No  Yes  Don't Know

46 In the last 12 months, did you observe any of the following renovations or construction in, or next to, the area(s) where you work?

Painting walls and fixtures?

No  Yes  Don't Know

Ripping out and replacing walls, woodwork, and partitions?

No  Yes  Don't Know

Ripping out and replacing floors, carpets, and fixed furniture?

No  Yes  Don't Know

[<< Previous page](#) [Next page >>](#) [Save progress](#) 48.6%

### *Reference Period*

The interpretation of the reference periods in these questions aligned closely with the household questions Q30 and Q31. Most respondents said they interpreted “the last 12 months” to be the period from month of the interview the previous year till the interview, or they tended to think of a specific event, such as a flood or a renovation, many of which occurred in the last few months.

### *Question Construct and Interpretations*

The interpretations of the core constructs appeared very even across the respondents. Most respondent who mentioned water leakage were thinking about either a flood or a machine. A few respondent noted that they did not know whether or not there was leakage or mold because they did not go out and look for it behind machines or fixtures. With Question 46, most respondents were thinking of particular instances of construction in their work areas. Most respondents who worked at hospitals noted that there is always construction of some sort going on.

Unlike the core construct of construction, the interpretation of the phrase “...in, or next to the area in which you work...” was relatively broad and varied across respondents. Some respondents only considered their work stations or offices, while others considered whole departments or even the entire office or hospital. In general, the respondents whose jobs were area-specific, such as lab techs, OR techs, and dental assistants, appeared to have the narrowest

interpretation of this phase, whereas central supply workers and respiratory therapists had the wider interpretations.

## Question 47

**Use of Hand Sanitizers**

47 How many times on a typical day, both at home and at work, do you disinfect your hands with liquid hand sanitizers?

Never

1-3 times per day

4-10 times per day

More than 10 times per day

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### *Reference Period*

The respondents all interpreted this reference period as the question instructs, and attempted to find an average of their usage on a typical day. A number of respondents directly involved in patient care noted that their schedules were variable (in terms of number of patients), and arriving at a “typical day” was difficult.

### *Question Construct and Interpretations*

There was no observable variation in the interpretation of the core construct in Question 47, with all respondents counting single action of applying and using liquid/gel disinfectant as a “time.”

### *Response Categories*

No respondents reported “never” using hand sanitizer, and 7 of 13 respondents indicated more than 10. A number of the respondent who reported 1-3 or 4-10 times a day indicated that it was either based on the number of patients they had, which could be fewer than or more than 10, or they were not directly involved in patient care. Of the respondents who reported more than 10, most indicated that quantifying an exact number would be difficult, but that it would probably be well over 10, again depending on patient load.

## Questions 48 and 49

*Thinking about your current job and what you have done in this job in the last 12 months:*

**Sterilizing Medical Instruments**

48 Do you sterilize or high-level disinfect medical instruments, including dental instruments or ventilator parts, in central supply or other locations such as endoscopy and bronchoscopy units, hemodialysis units, operating rooms, or other clinical settings? \*

No  Yes

**Cleaning Fixed Surfaces, Equipment or Instruments**

49 Do you clean or disinfect fixed surfaces, equipment, or instruments?  
Examples of fixed surfaces are: counter tops, floors, beds, and bathrooms.  
Examples of equipment are: IV poles, monitors, carts, and computers.  
Examples of instruments are: blood pressure cuffs, and stethoscopes.\*

No  Yes

[<< Previous page](#) [Next page >>](#) [Save progress](#) 50.47%

### *Reference Period*

The prompt before Questions 48 and 49 instructed respondents to thinking about the last 12 months. However, in some cases in Questions 48 and 49, and more frequently in the questions following these two screeners, respondents thought not about just the last 12 months, but rather about their current job. The reference period prompt mentions both of these conditions, and since the “thinking about your current job” is first, some respondents might only consider that instruction and not the full “thinking about your current job and what you have done in the last 12 months” instruction.

### *Question Construct and Interpretations*

Previous testing found that Qs 48 and 49 did not effectively screen individuals, with respondents who have no experience *sterilizing* being sent to both the sterilizing and disinfecting series. While there were divergent interpretations of the key concepts in both Q48 and Q49 across the whole sample and across professions, the questions did not allow any false positives to continue into the wrong series.

*Cleaning Processes:* First and foremost, there were multiple understandings of the concept of “sterilization.” Almost all respondents knew that sterilization was an extreme level of clean, but high-education respondents and central supply workers had more nuanced definitions (usually

having to do with a complete absence of biological material). The term that accompanies “sterilize” in Q48—“high level disinfect[ion]”—had an even wider interpretation across the study sample. Some respondents indicated that they did not perceive a difference between sterilization and high-level disinfection. For instance, a dental assistant reported:

I mean, they sound the same to me. I think clean.

Others seemed to believe that there was some difference between the two processes, but that they were inter-changeable for practical purposes. For instance, another dental assistant noted:

High-level disinfection would probably be spraying it down with the solution. Because when we say sterilize, we usually only mean when it goes into the autoclave. But I would probably consider that [the autoclave process] to be high-level disinfect too.

A third group, including the same respondents who provided a nuanced and narrow definition of sterilization, understood there to be a clear distinction between sterilization and high-level disinfection. For instance, a central supply manager said the difference between the two processes was the presence or absence of spores.

Expanding to the processes asked about in Q49—cleaning and disinfecting—the same general groups of respondents differed in their interpretations. The majority of respondents understood that there was a difference between sterilizing/high-level disinfecting and cleaning/disinfecting. Many of these respondents reported that they wiped their instruments or work surfaces with alcohol or bleach wipes. Again, respondents with higher educational attainment and those working in central supply perceived the differences between the processes as more nuanced. For instance, one central supply worker noted that:

Cleaning is reducing the amount of contamination on that product...Disinfection is continuing to reduce the amount of contamination, specifically microorganisms, on the surface of the product. But disinfection will not take care of the spores. The only thing that will take care of the spores is sterilization.

Taken all together, there appear to be three distinct interpretations about the cleaning processes upon which Qs 48 and 49 are centered. The first interpretation is to consider all the processes mentioned as separate, each having different properties and each occurring separately in the overall cleaning process. This interpretation was only evident among highly-educated respondents, all of whom were either RNs or held post-graduate degrees. The second interpretation, apparent with less educated central supply workers and RNs, is that sterilization and high-level disinfecting are equivalent processes, and are separate than disinfecting and cleaning. The third interpretation is that there is a distinction between sterilization and cleaning, but does not differ between cleaning and the various levels of disinfecting.

**Table 2: types of Cleaning Processes**

<b>Types</b>	<b>Interpretation 1</b>	<b>Interpretation 2</b>	<b>Interpretation 3</b>
<b>Separate Types of Cleaning Processes</b>	Sterilization High-level Disinfecting Disinfecting Cleaning	Sterilization  Disinfecting Cleaning	Sterilization   Cleaning

*Instruments, surfaces, and equipment:* Overall, there was some observable differences in the respondents’ interpretations of the objects (in contrast to the processes) they were asked about. It did appear that most respondents considered all three categories of objects in Q49 separately. For instance, what asked what she was considering when asking this question one central supply worker said the following:

Well...I guess I was like, “fixed surfaces, yes.” We do countertops. Like our department doesn’t do equipment, another department does that...so IV poles and carts...I guess we do some disinfecting of equipment, but most of that goes [elsewhere]...Yeah, we do instruments. To me, in this question, I always put instruments and equipment into two different categories. So that kind of threw me off because I kind of tuned out the instruments, and thought about inanimate objects likes counters and carts...to me instruments are surgical instruments.

In addition to this fact that these Q49 might be multi-barreled, there appeared to be some variation in whether the respondents interpreted these questions as asking about their work or out-of-work (“home”) lives. This variation was limited to Q49 in this pair, as all the respondents perceived “sterilization” as a key word framing their thinking to the workplace. However, since Q49’s examples included items found both at home and work (i.e. counters, beds), and since very few of the respondents worked housekeeping at their facilities, these examples skewed the focus of their answer from the strictly-work implied by Q48, to a more mixed focus in Q49. For example, one respiratory technician explained her thinking this way:

It seems like it’s asking for home and work. Cause I clean my stethoscope, and I wipe my kitchen counters down. I use Lysol in my home. Stethoscope I use bleach wipes. And the vents [ventilators]. But I disinfect at home too.

## Question 50.1



## Sterilizing Medical Instruments

50.1 Which of the following sterilants or high-level disinfectants do you use to sterilize medical instruments?

Acetic acid

No  Yes  Don't Know

Alcohol, such as ethanol or isopropanol

No  Yes  Don't Know

Bleach or chlorine, such as Clorox®

No  Yes  Don't Know

Enzymatic cleaners, such as Asepti-Zyme®, 3M Rapid Multi-Enzyme®

No  Yes  Don't Know

Ethylene oxide in compressed-gas cylinders, single-dose cartridges or glass ampules

No  Yes  Don't Know

Formaldehyde

No  Yes  Don't Know

Glutaraldehydes such as Cidex®, Metricide®, Rapicide®, Wavicide®, Aldahol III®, Sporicidin

No  Yes  Don't Know

Hydrogen peroxides such as Accell®, Optim®, Resert XL®, Sporox®, Acecide®, EndoSpore Plus®, Metrex®, Peract®, Sterad®

No  Yes  Don't Know

Hypochlorite or hypochlorous acids such as Sterilox®

No  Yes  Don't Know

Ortho-phthalaldehydes such as Cidex OPA®, Opaciden®

No  Yes  Don't Know

Peracetic acid such as Steris®

No  Yes  Don't Know

Please write any other sterilizing or high-level disinfecting chemicals or product names you use

1.

2.

3.

4.

5.

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51.4%

Six respondents screened into the Sterilizing Medical Instruments series (Questions 50.1 through 50.8.1). This includes 2 dental assistants, 3 central supply workers, and 1 OR technician.

### *Reference Period*

There was no obvious reference period given. While Q48, which screened into this series, sets the reference period at the respondent's "current job and in the last 12 months," it was not clear whether or not the respondents were to abide by this reference period in Question 50.1. Most respondents therefore answered this question just in reference to their current job, without respect to a specific time period.

### *Question Construct and Interpretations*

The two major interpretations of this question that emerged from the interviews, centering upon the phrase "sterilants or high-level disinfectants," follow from the respondents' interpretations of Q48. Again, respondents who had more knowledge about the cleaning processes—central supply managers and other highly-educated respondents—had more nuanced understandings of those processes. In Q50.1, these same respondents answered the question with this nuanced understanding in mind, pointing out that compounds including acetic acid, alcohol, bleach, enzymatic cleaner, and formaldehyde cannot function as either sterilants or high-level disinfectants. For example, a dental assistant who answered no to the alcohol prompt noted:

We use alcohol, but we don't use it for sterilization.

Likewise, an OR technician responded:

We use the enzymatic stuff. It's like a spray foam. But we just use it mostly as a kinda pre-clean, not as a sterilant or high-level disinfectant. To me, that's kinda off, because it's something we spray before it goes downstairs [to central supply]. But this question is asking about sterilization, so I don't know.

Finally, one of the central supply manager's reaction to this question was rather pointed:

You probably want to change this question's wording. Because you ask, which of the following sterilants or high-level disinfectants...Acetic acid can certainly be a high-level disinfectant [but not a sterilant], so you're ok there I guess. Alcohol is neither of those, it's a mid-level disinfectant. So you might want to just say "disinfectant."

This respondent, as well as the other central supply manager went on to answer the questions as they were worked, noting that they use many of the chemicals listed in Q50.1 to clean, but not to sterilize, instruments.

The second interpretation was common amongst respondents with a less nuanced understanding of the cleaning processes. They largely read the question as "Which of the following chemicals do you use on medical instruments," and did not always consider whether or not they used them for sterilization or just for cleaning.

Especially among this latter group, and across the list questions throughout the survey, there was also a trend of answering yes to questions based not on specific knowledge of the compound, but

rather a familiarity with the brand names. For example, one central supply worker noted the following when answering the hypochlorite/hypochlorous acid sub-question:

I'm not sure about Sterilox. It sounds like the solution we use [in the sterilization machines], but I can't be sure.

As this respondent worked his way down the list, he later recognized that the machine in question uses "Steris," a peracetic acid. He did not go back and change his answer to the hypochlorite/hypochlorous acid sub-question.

As noted above in the general findings, this reliance on the examples and brand names could lead to be false positives (as in the case above), or false negatives when a respondent does not see or recognize any of the brands in compounds they do actually use. Though some respondents chose the "Don't know" answer category in cases like this, most answered "no" in this circumstance. For example, when explaining why she said no to the glutaraldehyde sub-question, a dental assistant said:

I'm going to have to say no, because I've never seen any of these.

This potential for false positives and negatives appeared to exist across all of the list questions in the survey in addition to Q50.1, particularly Questions 51.1 and 53.1.

## Question 50.1 (Detailed Questions)

## Sterilizing Medical Instruments

50.1 Which of the following sterilants or high-level disinfectants do you use to sterilize medical instruments?

Acetic acid

No  Yes  Don't Know

Alcohol, such as ethanol or isopropanol

No  Yes  Don't Know

Bleach or chlorine, such as Clorox®

No  Yes  Don't Know

Enzymatic cleaners, such as Asepti-Zyme®, 3M Rapid Multi-Enzyme®

No  Yes  Don't Know

Ethylene oxide in compressed-gas cylinders, single-dose cartridges or glass ampules

No  Yes  Don't Know

Formaldehyde

No  Yes  Don't Know

Glutaraldehydes such as Cidex®, Metricide®, Rapicide®, Wavicide®, Aldahol III®, Sporicidin

No  Yes  Don't Know

Hydrogen peroxides such as Accell®, Optim®, Resert XL®, Sporox®, Acecide®, EndoSpore Plus®, Metrex®, Peract®, Sterad®

No  Yes  Don't Know

Hypochlorite or hypochlorous acids such as Sterilox®

No  Yes  Don't Know

Ortho-phthalaldehydes such as Cidex OPA®, Opaciden®

No  Yes  Don't Know

Peracetic acid such as Steris®

No  Yes  Don't Know

Please write any other sterilizing or high-level disinfecting chemicals or product names you use

1.

2.

3.

4.

5.

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51.4%

### *Reference Period*

All respondents carried the reference period they used in the main section of Q50.1 to the detailed questions on the next screen, with most respondents answering about their current job.

### *Question Construct and Interpretations*

*Days a week:* There was no observable variation in the interpretation of this detailed question. All respondents generally understood this to mean the number of days they use the particular product over an average week.

*Gloves worn:* While there was no observable variation in the interpretation of this detailed question, it did appear to cause some cognitive and usability burden for some respondents. First of all, a number of respondents did not know whether or not they used latex or nitrile glove. While managers tended to know the specifics—one central supply manager spoke at length about the relative thickness of latex versus nitrile gloves—most did not. On a usability note, no respondents ever noted using more than one type of glove across the whole survey. For instance, if a respondent noted that she used nitrile gloves for the sterilization processes, she would also say the same not only for all the separate sterilization processes, but also for cleaning processes (the 51 series) and the various profession-specific series. As a result, a number of respondents noted that asking “gloves worn” for each chemical or process was rather repetitive.

## **Questions 50.2 and 50.3**

The screenshot shows a survey interface with a light blue header bar containing the text: "On a typical day when you use sterilants or high-level disinfectants". Below this, question 50.2 asks: "50.2 How many times per day do you use these products?". It has three radio button options: "1-3 times per day", "4-10 times per day", and "More than 10 times per day". Question 50.3 asks: "50.3 how many hours per day do you use these products?". It has three radio button options: "Less than 1 hour per day", "1-4 hours per day", and "More than 4 hours per day".

### *Reference Period*

All respondents carried the reference period they used in Q50.1 on through Questions 50.2 and 50.3, with most respondents answering about their current job.

### *Question Construct and Interpretations*

These two questions produced quite a bit of confusion, resulting in a diversity of interpretations. This confusion was rooted in how the respondents variously interpreted and defined the terms, “use” and “times a day” found in Q50.2. Workers across professions did not have a standard definition for what counted as a “time,” and there was even some various within a given

profession. For instance, one respiratory technician counted each patient who required a continuous aerosolized medicine as a “time,” whereas another respiratory technician counted each instance she had to change out the medicines across all of her patients as a “time.” This issue is present across the entire survey when respondents come across questions asking them to quantify discrete times or usages. However, it is particularly problematic in this instance because of the large range in interpretations of what counted as “sterilizing” or “disinfecting,” noted above in Q50.1.

This interpretation where “uses” or “times” are not interpreted as discrete actions was clear in the responses to Q50.3. Most respondents did not think of the exact time it took to wipe down an instrument with a wipe, for instance, but rather the *percentage* of their day that might include that action. For example, when I asked what a dental assistant said that she used the products 4 hours a day was thinking about, she replied:

Well, we’re there [at work] for 8 hours a day, and we use them constantly, so more than 4 obviously.

Another dental assistant responded that:

Just because everything has to be sterilized in the medical field, so we’re always wiping things down.

When I followed up by asking if she was actually wiping for 4 hours a day, she said:

It’s just part of the routine: you’re just constantly cleaning.

Besides what particular actions count as a discrete use or time, there was some variation between manager and line workers. While workers tended to interpret the questions as just asking about their individual experience, managers tended to think about their whole department. For instance, a central supply manager noted that he performed the actions more than 10 times a day. In explaining this answer, he reported:

It’s much more than 10 times a day, it’s the number of times we can run the machine. We have 3 shifts, although the night shift has few people working it...so it could be 300, 350 times a day.

Line workers, on the other hand, did not think about their whole departments and instead reported on just the number of “times” they performed the action every day (as well as calculating the hours/day for just themselves in Q50.3).

## Questions 50.4 and 50.4.1

50.4 In the last 12 months, have you ever prepared medical instruments for sterilization by manually disassembling instruments, removing gross contaminants, or flushing gross contaminants and waste?\*

No  Yes  Don't Know

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50.4.1 When you remove gross contaminants and waste from scopes and instruments, please indicate how many days per week, times per day, duration of task, and the type of gloves used when you perform this task.

Days per week	Times per day	Duration of task in minutes	Gloves worn
- --Please Select--	--Please Select--	--Please Select--	--Please Select--

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54.21%

All six respondents who screened into this section answered Q50.4 in the affirmative.

*Reference Period*

All respondents carried the reference period they used in Q50.1 on through Questions 50.4 and 50.4.1, with most respondents answering about their current job.

*Question Construct and Interpretations*

Although all respondents who received these questions answered “yes” to Q50.4, two major interpretations emerged. Those respondents who worked with instruments prior to the central supply/sterilization process appeared to focus on the “removing gross contaminants or flushing gross contaminants and waste” clauses of the question. Specifically, almost all of these respondents reported that they were thinking about flushing tissue and blood off of the instruments before they were soaked in pre-sterilants or sent to central supply. Central supply workers, on the other hand, focused on the “disassembling instruments” part of the question, and reported thinking about taking apart more complex instruments (such as scopes) before they were placed in various sterilizing machines.

Q50.4.1 displayed the same variations in interpretations surrounding the questions “times a day” and duration noted above in Q50.2 and Q50.3. Respondents reported that they visualized an “average” week to answer the “days per week” question. The issues surrounding the “gloves” question in Q50.1 were present here as well.

**Questions 50.5 and 50.5.1**

50.5 In the last 12 months, have you ever prepared medical instruments for sterilization by refilling or changing sterilization solutions?\*

No
  Yes
  Don't Know

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55.14%



50.5.1 When you refill or change sterilization solutions, please indicate how many days per week, times per day, duration of task, and the type of gloves used when you perform this task.

Days per week	Times per day	Duration of task in minutes	Gloves worn
--Please Select--	--Please Select--	--Please Select--	--Please Select--

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### Reference Period

All respondents carried the reference period they used in Q50.1 on through Question 50.5 and Question 50.5.1, with most respondents answering about their current job.

### Question Construct and Interpretations

There was no observable variation in the interpretation of the questions across the respondents. Respondents all believed this question was asking about the actions they performed on the sterilizing machinery, and particularly noted that they had a schedule for changing the chemicals in the machines. Some respondents noted that they did not refill anything *per se*, as they received the chemicals in capsules that they simply loaded into the machines. Almost all the respondents expressed some initial confusion over the question, and pointed out that they would not consider machine maintenance/upkeep to be “preparing medical instruments.”

Only two respondents screened into Q50.5.1, both dental assistants. They expressed difficulty with this question, particularly the times a day and duration sections, as refilling their autoclaves was not a regular process and did not take but a few seconds to do.

## Questions 50.6, 50.6.1, 50.6.2, and 50.6.2.1

50.6 In the last 12 months, have you ever manually sterilized medical instruments?\*

No  Yes  Don't Know

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**50.6.1** When you manually sterilize medical instruments, please indicate how many days per week, times per day, duration of task, and the type of gloves used when you perform this task.

Days per week	Times per day	Duration of task in minutes	Gloves worn
--Please Select--	--Please Select--	--Please Select--	--Please Select--

**50.6.2** Do you use a sterilants immersion container when you manually sterilize or high-level disinfect medical instruments?\*

No  Yes  Don't Know

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57.94%

**50.6.2.1** What conditions apply when using a sterilants immersion container?

**Enclosed box or exhaust hood used**

No  Yes  Don't Know

**Emersion box equipped with a tight fitting lid**

No  Yes  Don't Know

**Local exhaust ventilation is used in room**

No  Yes  Don't Know

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58.88%

All six respondents who screened into this section replied in the negative to Q50.6. Therefore, nobody screened into 50.6.1, 50.6.2 or 50.6.2.1.

### *Reference Period*

All respondents carried the reference period they used in Q50.1 on through the Question 50.6 series, with most respondents answering about their current job.

### *Question Construct and Interpretations*

There was no variation in how the respondents interpreted this question, with all of the respondents responding as if this was asking whether or not they used soaking or scrubbing (non-mechanized or automated) methods to sterilize instruments. Overall, the respondents expressed confusion with this question, as manual sterilization is not a currently acceptable practice. For instance, an operating room technician said:

I don't really know what you mean by manually sterilizing. To me that would be doing it without a machine. Maybe using a cide-x or chemical?"

A central supply worker responded:

I don't really know what manual sterilization would be.

One central supply manager noted that there were some manual techniques when she started in the industry, but that she had never used them at her hospital and did not think that they were either safe or acceptable. All in all, it appeared as though respondents were interpreting this question via an inverse definition—they considered manual the “opposite” of machine-run sterilization.

## Questions 50.7 and 5.7.1

50.7 In the last 12 months, have you ever sterilized medical instruments using automated systems?

No  Yes  Don't Know

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59.81%

50.7.1 Which tasks do you perform to sterilize medical instruments using automated systems?

Operate Ethylene oxide sterilizer

No  Yes  Don't Know

Operate plasma hydrogen peroxide Sterad® system

No  Yes  Don't Know

Operate Steris® system

No  Yes  Don't Know

Conduct maintenance on systems, such as cleaning or replacing screens and filters

No  Yes  Don't Know

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68.75%

### *Reference Period*

Respondents all appeared to ignore the “12 month” reference period and answer about their current positions, as they have in previous sections of the instrument.

### *Question Construct and Interpretations*

There were two related interpretations of Question 50.7, with respondents either thinking about using an autoclave or using a chemical-based machine or system (such as an ethylene oxide system). This set of questions was framed by the previous question set, Q50.6 *et al*, which asked about *manual* sterilizing. As noted above, people did not really know what “manual” sterilizing was except that it was not done by a machine. Therefore, the respondents interpreted this question set as referring to those actions involving a machine.

There was no variation *per se* in the interpretation of Questions 50.7.1. However, there were false positives present, as some respondents did not seem to know how the system they used fit into the options in Q50.7.1. This was particularly clear with respondents who used autoclaves. For instance, a dental assistant answered “yes” to using an ethylene oxidate sterilizer, and when asked to explain why she said yes stated:

I’ve seen those words before, because it [the autoclave in her lab] has an ethylene strip on the back.

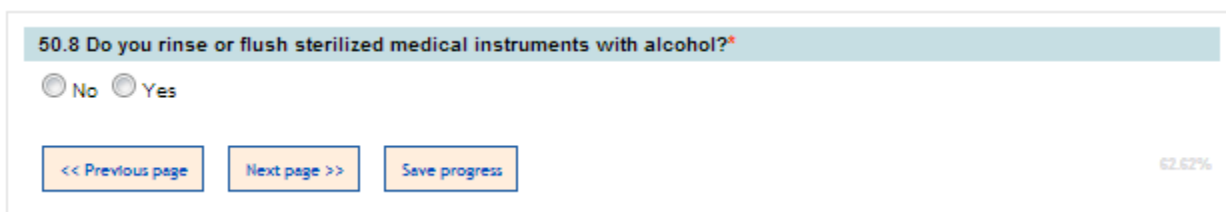
One comprehension issue that emerged in Q50.7.1 was that the fourth sub-question, “Conduct maintenance on systems, such as cleaning or replacing screens and filters,” appeared to be out of place in a number of respondents’ minds. For instance, a central supply worker said:

So this is under this question, which tasks do you perform to sterilize medical instruments using automated systems. So [the other three] make sense. But here it says conduct maintenance. This is an entirely different question!

While the respondents all provided valid answers to this sub-question, its placement prompted noticeable signs of frustration in some.

The detailed sub-questions in the second screen of Q50.7.1 also proved to be problematic. First, noted above, times per day and duration of task were difficult for respondents to answer. Because of the wide variety of interpretations of how to approach these questions, the respondents’ answers varied widely. Furthermore, most respondents noted that they did not know what the term “controls” referred to in the question text. Perhaps due to this, the interpretations of the last two columns (Is the system enclosed? And is local ventilation used?) were quite divergent across the sample. For instance, one respondent said “yes” her system was enclosed because the machine itself was sealed. However, another respondent applied different logic, saying that the room the machine was in was not sealed, so she had to answer “no.”

## Questions 50.8 and 50.8.1

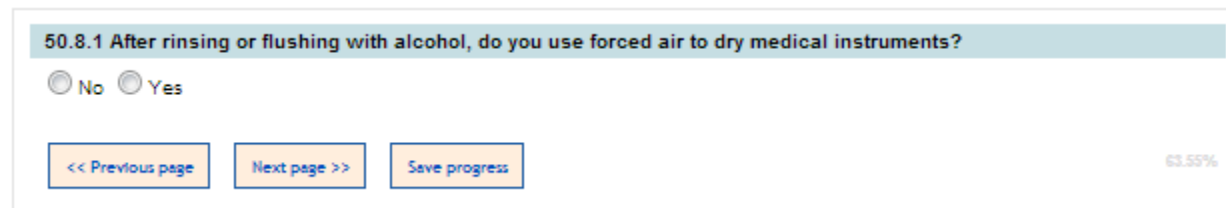


50.8 Do you rinse or flush sterilized medical instruments with alcohol?\*

No  Yes

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62.62%



50.8.1 After rinsing or flushing with alcohol, do you use forced air to dry medical instruments?

No  Yes

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63.55%

### *Reference Period*

All respondents took these questions to be referring to their current job.

### *Question Construct and Interpretations*

There was no variation in how respondents interpreted this question. Everyone who screened into this question answered “no,” interpreting the question as asking whether or not they used alcohol on already-sterilized instruments. Many respondents replied that they would never do this, as it would contaminate a sterilized instrument that would then have to be re-sterilized. For instance, a central supply manager said:

I guess the question here is prior to or after sterilization? Cause if it’s after, that makes no sense. Alcohol would just compromise their [the instruments] sterility...Because once you open the package, they’re no longer sterile.

Because no respondents answered “yes” to Q50.8, nobody screened into Q50.8.1.

## Question 51.1

## Cleaning Fixed Surfaces, Equipment or Instruments

51.1 Which cleaners or disinfectants do you use for cleaning fixed surfaces, equipment, or instruments?

Glass cleaning products such as Windex®

No  Yes  Don't Know

Acids

No  Yes  Don't Know

Alcohol, such as ethanol and isopropanol

No  Yes  Don't Know

Ammonia

No  Yes  Don't Know

Bleach or chlorine, such as Clorox®

No  Yes  Don't Know

Detergents

No  Yes  Don't Know

Enzymatic cleaners such as Asepti-Zyme®, 3M Rapid Multi-Enzyme

No  Yes  Don't Know

Floor wax stripper

No  Yes  Don't Know

Phenolics, such as 3M Phenolic Disinfectant 18®, WexCide®, MicroBakII®, Megacide®, Novigard®, Sporidicin®

No  Yes  Don't Know

Quaternary ammonium compounds "Quats", such as 3M Neutral Quat 23®, 3M HB Quat 25®, Sani-Cloth Plus®, Oasis®, Staphene®, BTC100®, BioQuat®, Sentinel®

No  Yes  Don't Know

Please write any other cleaning or disinfection chemicals or products you use for cleaning fixed surfaces, equipment, or instruments

1.

2.

3.

4.

5.

6.

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65.42%

### *Reference Period*

All respondents took this question to be referring to their current life status and job.

### *Question Construct and Interpretations*

The largest source of variation in the interpretation of this question was due to the respondents' confusion over whether this question was asking about home, work, or both, as mentioned above in the general findings. For instance, one dental assistant indicated that she was only thinking about the products she uses at work here because of the word "instruments" in the question. Others expressed confusion about this point, but ultimately decided to answer the questions as if they were asking about work only. For example, an operating room technician noted:

I was just going back to check to see if I'm thinking about home or the workplace. Cause I see windex here, it's more of a household cleaner. But here [points further down the list] it's asking about OR stuff. So I'm going to take it as a workplace question.

Another possible interpretation was to take the question as only asking about home. One respiratory technician said:

I do use glass cleaners for my mirrors and windows.

I followed up to see if she was thinking about mirrors and windows at work or at home, and she said:

Yes [home], because it says windex. We don't carry windex here [at the hospital, where the interview took place].

The last interpretation was to answer the question considering both home and work. Another respiratory technician took this route. When I asked her what he was thinking about as he hesitated over an answer, he said:

I'm trying to figure out if it's still referencing home or work. Because it says windex. At work, I wouldn't be cleaning the windows

This respondent then decided that the question was asking about both the home and the workplace and proceeded as such.

From a questionnaire design perspective, this divergence in interpretations appeared to stem from two sources. First, as the entire survey (or at least the cognitively tested version, which dropped the first 30 questions about personal history) starts with questions about chemical spills and other potential sources of respiratory illness at home, the respondents approach all the following questions through this frame. Secondly, and building off this first design issue, is the ordering of the list of chemicals in Q51.1. The list starts with "Glass cleaning products such as Windex®," and is quickly followed up by bleach and detergents. While certainly each of these three classes of cleaning products have uses in the medical workplace—as a number of respondents testified—most respondents saw them as household, not workplace, cleaning products. Therefore, the early presentation of products that are interpreted as household



cleaners, combined with the framing issue, clearly introduces a large amount of cognitive uncertainty in the minds of the respondents.

In addition to the overall interpretation issues in Q51.1, two smaller areas of confusion arose. First, some respondents were unclear whether or not they should include their use of hand sanitizer in the “Alcohol, such as ethanol and isopropanol” sub-question. As a lab assistant noted:

Well, there’s alcohol in hand sanitizer, so I don’t know how to answer the question. I mean, cleaning my hands is cleaning, so I don’t know. I’m going to go with 7 days a week because it’s in hand sanitizer. Which then kinda voids this question about gloves, because you’re not wearing gloves.

When I followed up to ask whether he considered his hands a “fixed surface, equipment, or instrument,” the respondent said that he thought they counted.

A second small source of confusion was where the use of “sani-wipes” or the other omnipresent (in the medical environment) wipes should go. Many respondents did not know the particular chemical in the wipes, with some thinking they should go in the “Bleach or chlorine, such as Clorox®” sub-question, while others placed them in the “Enzymatic cleaners,” “Phenolics,” or the “Quaternary ammonium compounds” sub-questions. This confusion appears to stem from the way the respondents interpreted questions throughout the questionnaire that included specific examples. If a respondent recognized one or more of the examples, they would answer the question in the affirmative; if they did not recognize the compounds, they would answer in the negative (or with a “don’t know,” see Q53 below). This form of interpretation could lead to false negatives.

## Question 51.2

On a typical day when you use cleaners or disinfectants on fixed surfaces, equipment, or instruments:

51.2 How many times per day do you use these products?

1-3 times per day

4-10 times per day

More than 10 times per day

### *Reference Period*

All respondents took this question to be referring to their current life status and job. In answering this question, the respondents all attempted to construct an “average” day, but many noted that there was a lot of variation in their schedules day-to-day.

### *Question Construct and Interpretations*

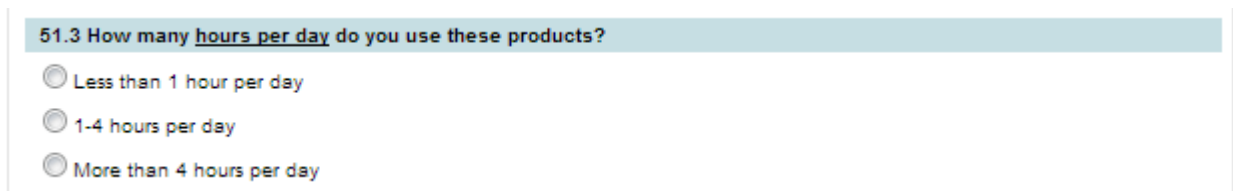
As noted above for previous questions asking about the number of uses/times a day a respondent performs a task, the interpretation of Question 51.2 was varied. Additionally, please note that the variation in whether or not a respondent answered Q51.1 about work or home carried over to Q51.2 as well.

All in all, there were three major interpretations of a “time” in Q51.2, all largely based around the use of cleaning wipes (a topic to be discussed ahead in Question 51.4). The first interpretation was that times a day referred to the total number of wipes used by a respondent to clean during the day. So if a respondent used 50 wipes total during the day, he or she would count that as 50 “times” a day, and answer “More than 10 times per day.”

The second interpretation was the number of times a respondent cleaned or wiped a particular piece of equipment—for example a stethoscope, a respirator, or a cart. No matter how many physical wipes it took to clean the equipment, the respondent would count this as one time. So if a respondent cleaned a respirator 3 times a day, and used 5 sani-wipes each time he or she cleaned the respirator; the respondent would count this as 3 times a day, and answer “1-3 times per day.”

The last interpretation is the broadest, and considers the number of times a cleaning task is completed, such as cleaning a room or a workstation regardless of the number of individual surfaces or pieces to be cleaned, or the number of wipes used. So if a respondent cleans 5 rooms a day that include a respirator, a cart, and a bed and uses 50 wipes each time to do so, he or she would count that as 5 times a day, and answer “4-10 times per day.”

### Question 51.3



51.3 How many hours per day do you use these products?

Less than 1 hour per day

1-4 hours per day

More than 4 hours per day

#### *Reference Period*

All respondents took this question to be referring to their current life status and job.

#### *Question Construct and Interpretations*

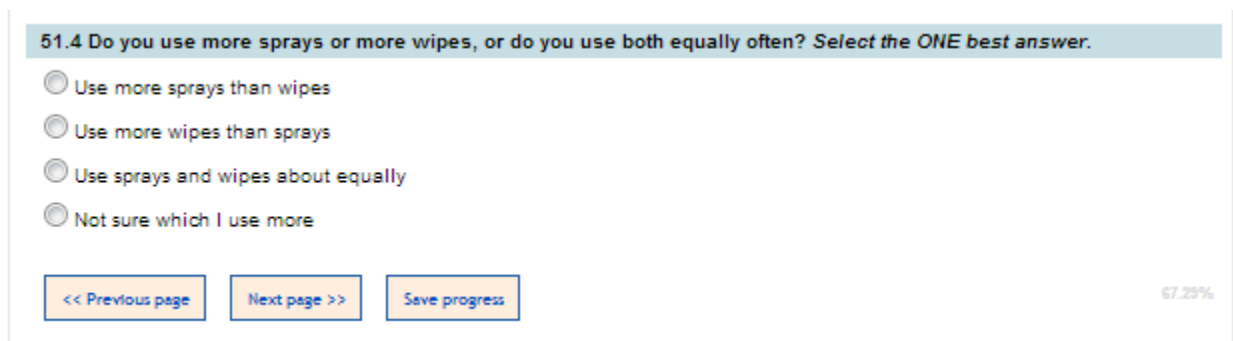
Given the wide range of interpretations to the previous question, Q51.2, there was no consistent understanding of this following question. Additionally, as noted above, duration questions caused respondents quite a bit of confusion to begin with, even with a consistent construct behind them (as in Q50.2).

Specifically here in Q51.3, the respondents were again largely thinking about the use of sani-wipes or other similar products. Many had a hard time quantifying and aggregating the amount of time it takes to use these products, reporting that it takes just a matter of seconds to use a single wipe. For instance, a respiratory technician stated:

Hours? It doesn't take long to wipe it down, just a few second. If I look across the whole day, maybe an hour. Total, for everything. I wouldn't take an hour to wipe just my stethoscope, you know?

Other respondents noted that the practice of wiping down their space or their stethoscopes had become such an ingrained routine for them, that they had a hard time even thinking about all the times they did it throughout an average day.

## Question 51.4



51.4 Do you use more sprays or more wipes, or do you use both equally often? Select the ONE best answer.

- Use more sprays than wipes
- Use more wipes than sprays
- Use sprays and wipes about equally
- Not sure which I use more

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67.23%

### *Reference Period*

All respondents took this question to be referring to their current life status and job.

### *Question Construct and Interpretations*

There was no observable variation in the interpretation of this question, as the respondents all appeared to understand that this question was asking about whether they used more wipes (such as sani-wipes) or sprays.

## Question 51.5

51.5 At work, which tasks do you perform when cleaning or disinfecting fixed surfaces, equipment, or instruments?

Wipe down beds, furniture, counters, walls, etc.

No  Yes  Don't Know

Cleanup spills or blood

No  Yes  Don't Know

Manually mix, refill, or empty cleaning or disinfecting products

No  Yes  Don't Know

Clean bathrooms including toilet, sink, shower

No  Yes  Don't Know

Spray then wipe glass, windows, mirrors

No  Yes  Don't Know

Polish wood furniture

No  Yes  Don't Know

Polish stainless steel surfaces

No  Yes  Don't Know

Spray deodorant/ disinfectant

No  Yes  Don't Know

Mop floors

No  Yes  Don't Know

Clean equipment such as scissors, stethoscopes, and thermometers, IV poles, carts, monitors, and computers

No  Yes  Don't Know

Conduct terminal cleaning of patient rooms

No  Yes  Don't Know

Use fogging equipment when conducting terminal cleaning of patient rooms

No  Yes  Don't Know

Clean or disinfect for MRSA, VRE or other drug resistant bacteria in patient rooms

No  Yes  Don't Know

Conduct end of shift cleaning of operating rooms, dialysis units or other patient care areas

No  Yes  Don't Know

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68.22%

*Reference Period*

All respondents took this question to be referring to their current life status and job.

### *Question Construct and Interpretations*

Question 51.5 displayed the same variation in interpretation as the Q51.1 series. Respondents again were split on interpreting this question as asking about home, work, or both. For instance, one respiratory technician explained how she was thinking about the question:

Now it is making me think about home, but “equipment” and “instruments” don’t jive. But things like beds are at home, so I don’t know.

An operating room technician also expressed confusion:

So this, I’m not sure if you want me think separately from work or home. Because polishing wood furniture, we don’t do that. In the OR, in the hospital, we don’t really have much wood because it’s porous, so I don’t know if you mean home.

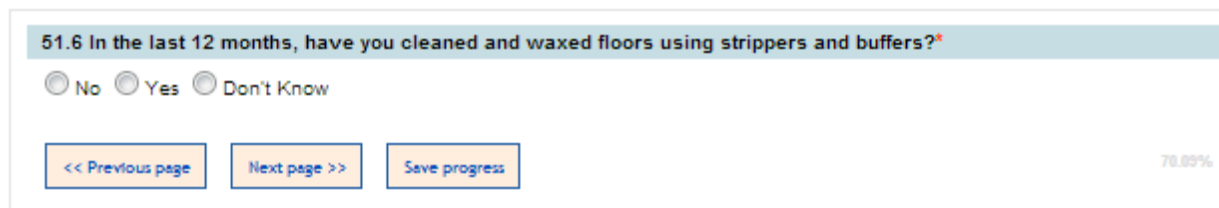
Finally, another respiratory technician explained:

The lower I get down the list, the more I question it [whether the question is about work or home]. When I saw “clean the bathroom,” I was still thinking about work, because last question asked about wipes and then this one asked about the tasks I perform with them. But when I get to things like “polish wood” and “spray deodorant,” I start to wonder. I do all of these at home.”

Unlike in Q51.1, in the case here of Q51.5, the household-directing items—such as beds, bathrooms, and floors—are spread throughout the list, so more respondents tended to either interpret the question as asking about both home and work. This is the opposite trend as seen in Q51.1, where more respondents eventually decided the question was about work because the final chemicals on that list were decidedly “work-like.”

Besides the home vs. work issue, there was not much variation noticeable in how the respondents interpreted the individual list items. For instance, all the respondents thought that “cleanup spills or blood” was asking whether or not they cleaned up blood. The follow-one questions asking about duration and times a day displayed the same interpretation and confusion issues noted for similar questions above.

## **Questions 51.6 and 51.6.1**



51.6 In the last 12 months, have you cleaned and waxed floors using strippers and buffers?\*

No  Yes  Don't Know

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78.89%

**51.6.1 Which tasks do you perform when cleaning and waxing floors using strippers and buffers?**

**Strip floors**

No  Yes  Don't Know

**Scrape floors**

No  Yes  Don't Know

**Buff floors**

No  Yes  Don't Know

**Wax floors**

No  Yes  Don't Know

[<< Previous page](#) [Next page >>](#) [Save progress](#) 71.83%

Question 51.6, which asks about whether or not the respondent had, in the last 12 months, “cleaned and waxed floors using strippers and buffers,” was the gateway question for Q51.6.1. No respondents answered “yes” to Q51.6, and thus no respondents received Q51.6.1.

## Questions 52 and 52.1

**Exposure to Chemicals Used in Medical or Clinical Laboratories**

*Thinking about your current job and what you have done in this job in the last 12 months:*

**52 Have you worked in a clinical or medical laboratory?\***

No  Yes

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**52.1 Which tasks do you perform or use when you work in the clinical or medical laboratory?**

**Use formalin to fix gross tissue and autopsy specimens**

No  Yes  Don't Know

**Use stains and dyes such as hematoxylin and eosin stains**

No  Yes  Don't Know

**Use solvents such as xylene and toluene to fix tissue specimens and rinse stains**

No  Yes  Don't Know

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Questions 52 and 52.1 comprise the “Exposure to Chemicals Used in Medical or Clinical Laboratories” section of the questionnaire, with Q52 serving as the gateway to Q52.1. Four respondents answered “yes” to Q52 and continued on to Q52.1.

### *Reference Period*

All respondents took these questions to be referring to their current job.

### *Question Construct and Interpretations*

There was some variation in how the respondents interpreted the central construct in Q52—“clinical or medical laboratory.” For instance, one dental assistant did not count the small lab in her office to count for this question, as she didn’t think it was a “clinical” laboratory. On the other hand, another dental assistant did count her office’s dental lab, and answered yes:

We have a lab in our office here we pour out impression and make crowns and stuff.

Respiratory therapists also showed some variation in their interpretations of the term “laboratory.” In respiratory therapy and pulmonary care, many clinical sites will have an area known as a “Pulmonary Function Test Laboratory,” or PFTL. The PFTL is staffed by specially-trained respiratory technicians who run the equipment and administer lung function tests. Across the sample of five respiratory therapists and technicians, three identified the PFTL as a lab that

would count for this question, while two did not (only one respiratory technician answered yes however, as the other two noted that they did not work in the PFTL).

These non-traditional, profession-specific interpretations of the laboratory construct led to some confusion for both the dental assistant and respiratory therapist who answered yes to the gateway question, Q52. Once they saw the tasks list in Q52.1, both noted that maybe they shouldn't have answered yes to Q52, perceiving the question as then only asking about blood or tissue labs.

## Questions 53 and 53.1

**Exposure to Products Used on Patients**

*Thinking about your current job and what you have done in this job in the last 12 months:*

53 Do you use chemicals, adhesives, antiseptics, alcohols, or solvents, such as solutions to remove adhesives, iodine, hydrogen peroxide, super glue, bone cement, alcohols, alcohol preps, mineral spirits, or toluene, on patients?\*

No  Yes

[<< Previous page](#) [Next page >>](#) [Save progress](#) 75.7%

53.1 Which tasks do you perform when you apply or use chemicals, antiseptics, adhesives, alcohols, or solvents on patients?

Disinfect skin areas on patients prior to procedure using wipes, gauze or swabs with antiseptics such as alcohols, iodine, acetic acid to

No  Yes  Don't Know

Clean and disinfect wounds using antiseptics such as, silver compounds, chlorhexidine, povidone iodine or cadexomer iodine

No  Yes  Don't Know

Apply wound dressing such as polyurethane based hydrogel, hydrocolloid, or hydrocellular foam

No  Yes  Don't Know

Use adhesives such as glues, acrylates, bone cements, benzoin tincture such as 3M® Steri-Strip® for surgery, skin closure, bone repair, ostomy bags, and other applications

No  Yes  Don't Know

Use adhesive removing solvents such as alcohols, acetone with wipes, gauze or swabs

No  Yes  Don't Know

Apply synthetic fiberglass casts

No  Yes  Don't Know

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Questions 53 and 53.1 comprise the “Exposure to Products Used on Patients” section of the questionnaire, with Q53 serving as the gateway to Q53.1. Seven respondents answered “yes” to Q53 and continued on to Q53.1.

### *Reference Period*

All respondents took these questions to be referring to their current job.

### *Question Construct and Interpretations*

There was not much variation in the respondents’ interpretation of the core constructs in Q53. What variation that was present had less to do with the respondents’ understandings of the technical products listed in the question, and more to do with not reading or thinking about the last clause (“...on patients”). Many of the respondents reported that they were going to answer the question one way, and changed their mind at the last moment after reading the “on patients” clause. For instance, a central supply manager said:

Oh, on patients. Initially I was going to say yes, but then I saw the “on patients.”

Likewise, a respiratory technician explained his answer by referencing this last clause:

The only thing I’m thinking about is the alcohol preps. Like I said, I use alcohol to clean my stethoscope. But that would be the only instance I would use that here...Not on patients. That’s why I said no.

On the other hand, some respondents missed the “on patients” clause, and answered as if the question was asking about instruments. A dental assistant, for example, was clearly not thinking about patients, but rather her instruments when she explained why she answered “yes” to Q53:

We have something [unintelligible] to clean cement off of instruments.

This variation could be due to a framing effect, as the questionnaire up to this point had not asked about patient care, only cleaning activities.

The seven respondents who screened into Q53.1 all interpreted the sub-questions similarly, by focusing their attention and understanding on the examples given (as noted above in Q51.1). This cognitive method led to some uncertainty; particularly in the “Apply wound dressing such as polyurethane based hydrogel, hydrocolloid, or hydrocellular foam” sub-question as respondents were not sure what specific compounds were found in the dressing they used. For example, an operating room technician explained his “don’t know” answer this way:

I think our docs use this, they hydrocolloid, but I don’t really know. ...It’s something that I would hand to the doc when they asked.

A dental assistant explained her “don’t know” in a similar way:

I’m not sure what type of dressing that we use, but we do use dressing...I’m just not sure if it has this stuff [referring to the examples in the question] in it.

While both of these respondents answered with a “don’t know” response, the interpretation of these and similar questions based on the specific examples provided might lead to false negative answers.

## Questions 54 and 54.1

**Exposure to Aerosolized Medicines Used with Patients**

*Thinking about your current job and what you have done in this job in the last 12 months:*

**54 Do you administer aerosolized medications that might include antibiotics such as Tobramycin, Amikacin, and Colistin, or other medications like pentamidine, ribavirin, bronchodilators, anesthetics, and antitrypsin?\***

No  Yes

78.5%

**54.1 Which tasks do you perform when you administer aerosolized medications**

**Administer aerosolized medications with a small volume nebulizer (SVN)**

No  Yes  Don't Know

**Use continuous aerosol delivery system for bronchodilators and other medicines**

No  Yes  Don't Know

**Administer aerosolized medications with a metered-dose inhaler (MDI)**

No  Yes  Don't Know

**Administer aerosolized medications with a dry powder inhaler (DPI)**

No  Yes  Don't Know

79.44%

Questions 54 and 54.1 comprise part of the “Exposure to Aerosolized Medicines Used with Patients” section of the questionnaire, with Q54 serving as the gateway to Q54.1, as well as Q54.2 and Q54.2.1. Five respondents, all respiratory/pulmonary workers, answered “yes” to Q54 and continued on to Q54.1, Q54.2, and Q54.2.1.

### *Reference Period*

All respondents took these questions to be referring to their current job.

### *Question Construct and Interpretations*

There was no observable variation in how respondents interpreted either of these questions. Individuals who did not work in pulmonary care or respiratory therapy answered “no” to Q54, whereas all the respiratory technicians and therapists in the sample answered “yes” and screened into the detailed questions. The five respondents who answered “yes” all noted that they saw the medicine “tobramycin” in the question and knew they used that—again displaying the interpretation pattern seen previous whereby respondents latch on to specific examples.

One small source of confusion that a few of the respiratory therapists noted was where they were supposed to count their use of ultrasonic nebulizers. For instance, one respiratory technician explained his answer to the "...small volume nebulizer (SVN)" sub-question this way:

It's just there are different types of nebulizers. There are pneumatic ones and then there are the ultrasonic ones. So people may classify them differently, but they're all small volume. But think people would tend to just think of the pneumatic ones here [in the SVN sub-question]...but there's an ultrasonic one too. As long as you're nebulizing a small volume, it doesn't matter how you do it.

So while that respondent decided to count his use of ultrasonic nebulizers in the SVN sub-question, others placed them in the "continuous delivery" sub-question. For example, another respiratory technician explained:

Well, we use ultrasonic like a continuous stream, so I'm thinking of that there [points to the continuous delivery sub-question], and just the small pneumatic ones here [points at the SVN sub-question]

Again, based on the pattern of interpretation seen throughout the questionnaire, lacking specific examples could lead to false negatives or miss-placed positives.

## Questions 54.2 and 54.2.1

54.2. What percent of the time do you use any respirator, other than a surgical mask, when administering aerosolized medication?\*

Never  About 25% of the time  About 50% of the time  About 75% of the time  100% of the time

[<< Previous page](#) [Next page >>](#) [Save progress](#) 81.31%

54.2.1 Do you use the following types of respirators when administering aerosolized medication?

**Particulate respirator such as an N95**

No  Yes  Don't Know

**Air purifying half mask**

No  Yes  Don't Know

**Air purifying full face piece**

No  Yes  Don't Know

**Powered air purifying**

No  Yes  Don't Know

[<< Previous page](#) [Next page >>](#) [Save progress](#) 82.24%

*Reference Period*

All respondents continued their reference period from the previous questions (Q54 and Q54.1), and took these questions to be referring to their current job.

### *Question Construct and Interpretations*

There was some variation in how respondents answered Question 54.2, mostly due to apparent social desirability responses. According to the respiratory therapy manager in sample, all respiratory technicians and therapists at the hospital where he and the others worked required 100% respirator use. However, he noted that it was a rule in name only, and in practice the respirators were only used in “isolation” (contagious) cases:

As a manager, I think they should do 100%, and by policy they should. But I know they don't. They use them for isolation cases...[which are about] 25% of our cases.

With that in mind, one respondent said that he used the mask 75% of the time, even for non-isolation cases. Others just reported the percent of isolation cases they had.

Question 54.2.1 produced quite a bit of confusion. Of the four types of respirators asked about, all five of the respiratory/pulmonary respondents had only heard of one (the N95 mask). All five noted that they did not know what “air purifying half masks,” “air purifying full face pieces,” or “powdered air purifying” masks were. Some of the respondents answered these with a “don't know,” however most simply answered “no” following the example-based interpretation pattern seen throughout.

## Questions 55 and 55.1

**Exposure to Chemicals used by Dental Assistants**

*Thinking about your current job and what you have done in this job in the last 12 months:*

**55 Have you worked as a dental assistant?\***

No  Yes

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**55.1 Which tasks do you perform as a dental assistant?**

Adjust, polish or repair dentures or use compounds such as methyl methacrylates, other acrylates, and epoxys

No  Yes  Don't Know

Prepare amalgams such as Vertex Soft®, Villacryl Soft®, Molloplast B®, and Mollosil®

No  Yes  Don't Know

Develop x-rays using film developing solutions

No  Yes  Don't Know

Use adhesives to place dentures or attach braces

No  Yes  Don't Know

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Questions 55 and 55.1 comprise the “Exposure to Products Used on Patients” section of the questionnaire, with Q55 serving as the gateway to Q55.1. Two respondents, both dental assistants, answered “yes” to Q55 and continued on to Q55.1.

### *Reference Period*

All respondents took these questions to be referring to their current job.

### *Question Construct and Interpretations*

There was no variation in the interpretation of Question 55. The only respondents who answered yes to the gateway were individuals who were currently dental assistants. Probing revealed no false negatives.

There was one small site of confusion in Question 55.1. Both respondents were unsure if the “developing x-rays...” sub-question also should include taking the x-rays. Both dental assistants decided that since the question did not specifically mention “taking” the photos, they would not count it and answered “no.”

## Questions 56 through 72

### Employment 5 Years Ago

*If you had more than one job 5 years ago, record information for the job where you worked the most hours per week.*

**56 Please check the ONE box that best describes your employment status 5 years ago.\***

- Employed in the healthcare industry
- Employed outside the healthcare industry
- Disabled
- On family leave
- On extended sick leave
- Retired
- Student
- Other, please specify:

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85.88%

**56.1 Please check the ONE box that best describes the type of industry your job was in 5 years ago.**

*If you had more than one job 5 years ago, record information for the job where you worked the most hours per week.\**

- Agriculture, forestry, and fishing
- Construction trades
- Healthcare and social assistance
- Manufacturing
- Mining
- Oil and gas extraction
- Public safety
- Services, such as finance, real estate, education, hospitality, repair, or human resources
- Transportation, warehousing, and utilities
- Wholesale and retail trade
- Other, please specify:

**56.2 Please write in the title for the job you had 5 years ago.**

Job title:

**56.3 What did you do at the job you had 5 years ago?**

**56.4 What was the name of the company where you worked 5 years ago?**

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86.92%

## Healthcare Employment 5 Years Ago

*If you had more than one job 5 years ago, record information for job where you worked the most hours per week.*

### 57 What was your occupation 5 years ago?\*

- Dental assistant
- Environmental service worker, housekeeper, or cleaner
- Lab technician, lab technologist, or assistant in a medical or clinical laboratory
- Licensed practical nurse (LPN) or licensed vocational nurse (LVN)
- Medical instrument preparers, central supply worker, or endoscopy technician
- Nursing assistant, nurse technician, nurse support assistant, patient care technician, patient support or orderly
- Operating room technician
- Registered nurse (RN)
- Respiratory therapist or respiratory technician
- Other, please specify

### 58 In which unit did you work 5 years ago?\*

- Hospital
- Nursing home
- Both hospital and nursing home
- Other, please specify

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87.85%



59 Where did you work in the facility 5 years ago?\*

- Administration
- Central supply
- Dental
- Dialysis
- Ear, nose, and throat (ENT)
- Education
- Emergency room (ER)
- Endoscopy
- Float or multiple locations
- General or internal medicine
- Intensive care
- Labor and delivery
- Laboratory, medical or clinical
- Non-patient care area
- Outpatient care
- Patient care ward
- Pediatric
- Psychiatric
- Pulmonary
- Surgery or operating room
- Other location, please specify

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88.79%

Thinking about the job you had 5 years ago.

60 Did you sterilize or high-level disinfect medical instruments, including dental instruments and ventilator parts, in central supply or other locations such as endoscopy and bronchoscopy units, hemodialysis units, operating rooms, or other clinical settings?\*

No  Yes  Don't Know

61 Did you clean or disinfect fixed surfaces, equipment, or instruments?  
Examples of fixed surfaces are: countertops, floors, beds, and bathrooms.  
Examples of equipment are: IV poles, monitors, carts, and computers.  
Examples of instruments are: blood pressure cuffs and stethoscopes.\*

No  Yes  Don't Know

62 Did you clean and wax floors using strippers and buffers?\*

No  Yes  Don't Know

63 Did you work in a medical or clinical laboratory?\*

No  Yes  Don't Know

64 Did you use chemicals, adhesives, antiseptics, alcohols, or solvents, such as solutions to remove adhesives, iodine, hydrogen peroxide, super glue, bone cement, alcohols, alcohol preps, mineral spirits, or toluene, on patients?\*

No  Yes  Don't Know

65 Did you administer aerosolized medications that might include antibiotics, such as Tobramycin, Amikacin, Colistin, pentamidine, ribavirin, bronchodilators, anesthetics, and antitrypsin?\*

No  Yes  Don't Know

66 Did you work as a dental assistant?\*

No  Yes  Don't Know

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89.72%

**67 How many hours per week did you work in the job you had 5 years ago?**

hours per week

**68 What year did you begin that job?**

Year

**69 What year did you stop working in that job?**

Year

**70 Were you regularly exposed to vapors, gases, dust, or fumes in that job?**

No  Yes  Don't Know

**71 Thinking about the job you had 5 years ago, did you observe any of the following in the building where you worked?**

**Water leakage or water damage indoors on walls, floors, or ceilings?**

No  Yes  Don't Know

**Visible mold growth (not on food) indoors on walls, floors, or ceilings?**

No  Yes  Don't Know

**Odor of mold or mildew (not from food)?**

No  Yes  Don't Know

**72 Thinking about the job you had 5 years ago, did you observe any renovations or construction in, or next to, the area(s) where you work?**

No  Yes  Don't Know

90.65%

### *Reference Period*

There were two major ways that respondents applied a reference period to this set of questions. The first was for individuals who knew they have held the same job for more than five years. These respondents answered the questions as if they were asking about their current jobs. As noted above, most of the questions throughout the “current” section were interpreted as asking about the respondents’ current jobs, so this seemed very redundant to this group of respondents.

The second method was to think about the job the respondent had 5 years ago, and then answer for that whole job, not just the point in time five years before present.

### *Question Construct and Interpretations*

These questions, about employment 5 years ago, follow the same interpretation patterns seen in their current employment counterparts. Please see Questions 39 through 49, and Questions 51, 52, 53, 54, and 55.

## Questions 73 through 73.9

### Changing Jobs

73 Have you ever had to change or leave a job or position because it affected your breathing? This would include changing jobs or positions within the same workplace.

No  Yes  Don't Know

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91.59%

*If this happened more than once, please answer the following questions about the most recent time you changed or left a job or position because it affected your breathing.*

**73.1 In which year did you change or leave this job or position?**

Year

**73.2 What kind of job or position did you change or leave?**

**73.3 Please check the ONE box that best describes what industry the job or position you changed or left was in.**

- Agriculture, forestry, and fishing
- Construction trades
- Health care and social assistance
- Manufacturing
- Mining
- Oil and gas extraction
- Public safety
- Services, such as finance, real estate, education, hospitality, repair, or human resources
- Transportation, warehousing, and utilities
- Wholesale and retail trade
- Other, please specify

*If this happened more than once, please answer the following questions about the most recent time you changed or left a job or position because it affected your breathing.*

**73.4 What had you done in the job or position you changed or left?**

*If this happened more than once, please answer the following questions about the most recent time you changed or left a job or position because it affected your breathing.*

**73.5 What exposure or activity affected your breathing in the job or position you changed or left?**

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92.52%

*If this happened more than once, please answer the following questions about the most recent time you changed or left a job or position because it affected your breathing.*

**73.6 Concerning the job or position you went to:** What kind of job or position did you go to?

*If this happened more than once, please answer the following questions about the most recent time you changed or left a job or position because it affected your breathing.*

**73.7 Please check the ONE box that best describes what industry the job or position you went to was in.**

- Agriculture, forestry, and fishing
- Construction trades
- Health care and social assistance
- Manufacturing
- Mining
- Oil and gas extraction
- Public safety
- Services, such as finance, real estate, education, hospitality, repair, or human resources
- Transportation, warehousing, and utilities
- Wholesale and retail trade
- Other, please specify

*If this happened more than once, please answer the following questions about the most recent time you changed or left a job or position because it affected your breathing.*

**73.8 What did you do in this new job or position?**

*If this happened more than once, please answer the following questions about the most recent time you changed or left a job or position because it affected your breathing.*

**73.9 What was the name of the company where you worked at this new job?**

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93.46%

Questions 73, 73.1, 73.2, 73.4, 73.5, 73.6, 73.7, 73.8, and 73.9 comprise the “Changing Jobs” section of the questionnaire, with Q73 serving as the gateway to the rest. Only one respondent answered yes to Q73 and continued into the detailed questions.

#### *Reference Period*

All respondents interpreted this question as asking about their entire working lives. The respondent who answered yes to Q73 was thinking about a job in high school.

#### *Question Construct and Interpretations*

There was no variation in the interpretation of this question across the sample, with all of the respondents understanding Q73 to ask about whether or not some sort of respiratory illness or incident made them change jobs.

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## 2. Appendix

Survey - Electronic Version

### Introduction Screen

Form Approved  
OMB No.  
Expires



Use the mouse on your computer to select your answers.

Click on the "Next page" button to begin the survey. [Next page >>](#)

You can return to previous page by clicking on the "Previous page" button. [<< Previous page](#)

If you want to come back later to complete the survey, click on the "Save progress" button at any time during the survey. [Save progress](#)

You will not be able to return to previously completed questions if you decide to come back later to complete the remaining questions on the survey.

[Next page >>](#) [Resume progress](#) [Save progress](#)

0%

Public reporting burden of this collection of information is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to CDC/ATSDR Reports Clearance Officer, 1600 Clifton Road NE, MS D-24, Atlanta, Georgia 30333; ATTN: PRA (XXXX-XXXX).

### Screen 1

#### Eligibility Questions

E1. Are you 18 years of age or older?\*

No  Yes

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.93%

## Screen 2

**E2. What is your current employment status? Please mark the single best answer.\***

- Currently employed in the healthcare industry
- Employed outside of the healthcare industry
- Unemployed
- Disabled
- On family leave
- On extended sick leave
- Retired
- Student
- Other, please specify:

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1.87%

## Screen 3

**E3. Please write in the title of your current job.**

**E4. What do you do at your current job?**

**E5. What is the name of the company where you currently work?**

**E6. Are work related respiratory problems the reason you are not working in the healthcare industry?**

- No  Yes

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2.8%

## Screen 4

**1 Have you had wheezing or whistling in your chest at any time in the last 12 months?\***

No  Yes

4.67%

## Screen 5

**1.1 Have you been at all breathless when the wheezing noise was present?**

No  Yes

**1.2 Have you had this wheezing or whistling when you did *not* have a cold?**

No  Yes

5.61%

## Screen 6

**2 Have you woken up with a feeling of tightness in your chest at any time in the last 12 months?**

No  Yes

**3 Have you had an attack of shortness of breath at any time in the last 12 months?**

No  Yes

**4 Have you had an attack of shortness of breath that came on during the day when you were at rest at any time in the last 12 months?**

No  Yes

**5 Have you had an attack of shortness of breath that came on *following* strenuous activity at any time in the last 12 months?**

No  Yes

**6 Have you been woken by an attack of shortness of breath at any time in the last 12 months?**

No  Yes

**7 In the last 12 months, have you *usually* coughed during the day, or at night, in the winter? \***

No  Yes

6.54%

## Screen 7

**7.1 In the last 12 months, have you coughed like this on most days for as much as 3 months?**

No  Yes

[<< Previous page](#) [Next page >>](#) [Save progress](#) 7.48%

## Screen 8

**8 Have you been woken by an attack of coughing at any time in the last 12 months?**

No  Yes

**9 In the last 12 months, have you usually brought up any phlegm (mucous) from your chest during the day, or at night, in the winter? \***

No  Yes

[<< Previous page](#) [Next page >>](#) [Save progress](#) 8.41%

## Screen 9

**9.1 In the last 12 months, have you brought up phlegm (mucous) like this on most days for as much as 3 months?**

No  Yes

[<< Previous page](#) [Next page >>](#) [Save progress](#) 9.35%

## Screen 10

**10 When you are near animals, such as cats, dogs or horses, do you ever:**

Get itchy or watery eyes?

No  Yes

Get a feeling of tightness in your chest?

No  Yes

Get a stuffy nose or sinus congestion or pressure?

No  Yes

**11 When you are in a dusty part of the house, or near pillows or comforters do you ever:**

Get itchy or watery eyes?

No  Yes

Get a feeling of tightness in your chest?

No  Yes

Get a stuffy nose or sinus congestion or pressure?

No  Yes

**12 When you are near trees, grass, or flowers, or when there is a lot of pollen around, do you ever:**

Get itchy or watery eyes?

No  Yes

Get a feeling of tightness in your chest?

No  Yes

Get a stuffy nose or sinus congestion or pressure?

No  Yes

**Question 13 asks about trouble breathing EVER IN YOUR LIFE.**

**13 Have you ever had trouble with your breathing? \***

No  Yes

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[Save progress](#)

10.28%

## Screen 11

**13.1 What kind of trouble did you have? Mark single best answer.**

- Continuously, as if breathing is not quite right.
- Repeatedly, however gets completely better
- Only rarely

**13.2 Was this trouble with your breathing brought on by your work environment? \***

- No
- Yes

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11.21%

## Screen 12

**14 Which exposures at work cause or trigger trouble breathing or respiratory symptoms like wheezing, chest tightness, shortness of breath, cough, or phlegm?**

*Please mark as many of the triggers as apply to you.*

**Workplace Symptom Triggers**

- Cleaning products
- Floor strippers or waxes
- Disinfecting or sterilizing solutions
- Hand sanitizers, liquid
- Adhesives, glues, or removers
- Aerosolized medications
- Gases or vapors
- Latex products
- Very cold or very hot temperatures
- If other triggers at work not listed, please specify:
- Don't know

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12.15%

## Screen 13

**15. Have you EVER had asthma? \***

- No
- Yes

**16. Have you EVER had an episode of asthmatic symptoms? \***

- No
- Yes

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13.08%

## Screen 14

**17 How old were you when you had your first episode of asthma symptoms?**

Years Old

**18. Were you employed when you had your first episode of asthma symptoms? \***

No  Yes

[<< Previous page](#) [Next page >>](#) [Save progress](#) 14.02%

## Screen 15

**When you had your first episode of asthmatic symptoms:**

**18.1 What type of job did you have?**

Job title:

**18.2. What did you do in this job?**

**18.3 What type of company did you work for?**

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## Screen 16

**19 Has your asthma been confirmed by a doctor? \***

No  Yes

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## Screen 17

**19.1 At what age was your asthma confirmed by a doctor?**

Years Old

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## Screen 18

20 After onset of asthma, did you ever have a period when you did not have asthma symptoms? \*

No  Yes

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17.76%

## Screen 19

20.1 At what age did your asthma symptoms disappear?

Years Old

20.2 Did your asthma symptoms reappear? \*

No  Yes

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18.69%

## Screen 20

20.2.1 At what age did your asthma symptoms reappear?

Years Old

20.2.2 Were you employed when your asthma symptoms reappeared? \*

No  Yes

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19.63%



## Screen 21

**20.2.2.1 What type of job did you have?**

Job title:

**20.2.2.2 What did you do in this job?**

**20.2.2.3 What type of company did you work for?**

Company type:

[<< Previous page](#) [Next page >>](#) [Save progress](#) 20.56%

## Screen 22

**21 Have you had an attack of asthma in the last 12 months? An asthma attack or asthma episode is when your asthma symptoms become worse than usual. \***

No  Yes

[<< Previous page](#) [Next page >>](#) [Save progress](#) 21.5%

## Screen 23

**21.2 How many attacks of asthma have you had in the last 12 months?**

Enter approximate number of attacks:

[<< Previous page](#) [Next page >>](#) [Save progress](#) 23.36%

## Screen 24

**22 Are you currently taking any medications for asthma including inhalers, aerosols or tablets? \***

No  Yes

[<< Previous page](#) [Next page >>](#) [Save progress](#) 24.3%

## Screen 25

22.1 In the last 12 months, did you use fast-acting (or rescue) bronchodilators for asthma? \*

No  Yes

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Save progress

25.23%

## Screen 26

22.1.1 In the last 12 months, were there times when you increased your usage of fast-acting (or rescue) bronchodilators on a short-term basis (over a period from 2 days to 2 weeks)?

No  Yes

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26.17%

## Screen 27

22.2 In the last 12 months, did you use inhaled steroids for asthma? \*

No  Yes

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Save progress

27.1%

## Screen 28

22.2.1 In the last 12 months, were there times when you increased your usage of inhaled steroids on a short-term basis (over a period from 2 days to 2 weeks)?

No  Yes

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Save progress

28.04%

## Screen 29

22.3 In the last 12 months, did you use oral steroids (for example, prednisone) for asthma? \*

No  Yes

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Save progress

28.97%

## Screen 30

22.3.1 In the last 12 months, were there times when you increased your usage of oral steroids on a short-term basis (over a period from 2 days to 2 weeks)?

No  Yes

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Save progress

29.91%

## Screen 31

23 Have you had to miss any days of work due to asthma in the last 12 months? \*

No  Yes

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Save progress

30.84%

## Screen 32

23.1 How many days of work did you have to miss due to asthma in the last 12 months?

Enter approximate number of days

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Save progress

31.78%

## Screen 33

24 Did you ever go to work in the last 12 months even though your asthma symptoms were especially bad? \*

No  Yes

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32.71%

## Screen 34

24.1 On how many days in the last 12 months did you go to work even though your asthma symptoms were especially bad?

Enter approximate number of days

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Save progress

33.64%

## Screen 35

25 Have you ever been hospitalized overnight (or longer) for asthma? \*

No  Yes

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## Screen 36

25.1 In the last 12 months, were you hospitalized overnight for asthma?

No  Yes

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## Screen 37

26 In the last 12 months, did you get urgent treatment for an asthma attack at a doctor's office, urgent care facility, or emergency department (ER)? Do not count routine planned appointments. (An asthma attack or asthma episode is when your asthma symptoms become worse than usual.) \*

No  Yes

[<< Previous page](#) [Next page >>](#) [Save progress](#) 36.45%

## Screen 38

26.1 In the last 12 months, how many times did you get urgent treatment for an asthma attack at a doctor's office, urgent care facility, or emergency department (ER)? Do not count routine planned appointments.

Times

[<< Previous page](#) [Next page >>](#) [Save progress](#) 37.38%

## Screen 39

27 Have you ever had any of the following medical conditions?

Chronic obstructive pulmonary disease, or COPD

No  Yes  Don't Know

Emphysema

No  Yes  Don't Know

Nasal or sinus allergies, including hay fever

No  Yes  Don't Know

Eczema or any kind of skin allergy

No  Yes  Don't Know

Allergies to animals

No  Yes  Don't Know

Allergies to dust or dust mites

No  Yes  Don't Know

Allergies to latex or latex-containing products (ace bandages/adhesive tape/gloves)

No  Yes  Don't Know

28 Has your biological mother had the following medical conditions?

Asthma?

No  Yes  Don't Know

Hay fever, eczema, or skin allergies?

No  Yes  Don't Know

29 Has your biological father had the following medical conditions?

Asthma?

No  Yes  Don't Know

Hay fever, eczema, or skin allergies?

No  Yes  Don't Know

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38.32%

## Screen 40

**HOME**

**30 In the last 12 months, have you observed any of the following in your house or apartment?**

**Water leakage or water damage indoors on walls, floors, or ceilings?**

No  Yes  Don't Know

**Visible mold growth (not on food) indoors on walls, floors, or ceilings?**

No  Yes  Don't Know

**Odor of mold or mildew (not from food)?**

No  Yes  Don't Know

**31 In the last 12 months, have there been any renovations or construction in your house or apartment?**

No  Yes  Don't Know

**32 In the last 12 months, how often have you personally cleaned your own home?**

Never  Less than 1 day per week  1-2 days per week  3-4 days per week  5-7 days per week

[<< Previous page](#) [Next page >>](#) [Save progress](#) 39.25%

## Screen 41

**33 In the last 12 months, on how many days a week have you used the following cleaning products in your own home? *Mark the single best answer for each cleaning product.***

**Any spray cleaning product**

Never  Less than 1 day per week  1-2 days per week  3-4 days per week  5-7 days per week

**Bleach, like Clorox®**

Never  Less than 1 day per week  1-2 days per week  3-4 days per week  5-7 days per week

**Ammonia products, like Mr. Clean Top Job®**

Never  Less than 1 day per week  1-2 days per week  3-4 days per week  5-7 days per week

**Window cleaners, like Windex®**

Never  Less than 1 day per week  1-2 days per week  3-4 days per week  5-7 days per week

**Air freshening sprays, like Febreze® or Glade®?**

Never  Less than 1 day per week  1-2 days per week  3-4 days per week  5-7 days per week

[<< Previous page](#) [Next page >>](#) [Save progress](#) 40.19%

## Screen 42

### Accidental Chemical Spill or Gas Release

34 Were you ever involved in or near an accidental chemical spill or gas release? \*

No  Yes  Don't Know

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41.12%

## Screen 43

34.1 In what year did the most recent accidental chemical spill or gas release occur?

Year:

34.2 Where did this most recent accidental chemical spill or gas release occur?

Home  Work  Elsewhere

34.3 What were you exposed to? *Please write in answer.*

34.4 Did you have to receive medical attention because of the most recent accidental exposure?

No  Yes  Don't Know

34.5 In the first 24 hours following the most recent accidental exposure, did you experience any respiratory symptoms such as shortness of breath, wheezing, cough, or tightness in your chest? \*

No  Yes  Don't Know

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42.06%

## Screen 44

34.5.1 When you experienced respiratory symptoms in the first 24 hours following the most recent accidental chemical spill or gas release, how long did these symptoms last?

Please mark the single best answer.

- Less than 1 week
- 1 week to 1 month
- More than 1 month but less than 3 months
- 3 months or longer
- Don't know

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42.99%

## Screen 45

### Employment History

#### History of Healthcare Work

35 Please record the age when you started working in healthcare OR the age you began as a healthcare student, whichever was earlier.

Years old

36 How many total years have you worked in healthcare? (Include years you were a healthcare student.)

Total years

#### Current Employment

If you have more than one current job, record information for the job where you work the most hours per week.

37 What is the name of hospital, nursing home or other facility where you currently work:

38 In which borough of New York City or nearby city is the hospital, nursing home, or other facility where you currently work:

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43.93%



## Screen 46

### 39 What is your *current* occupation?\*

- Dental assistant
- Environmental service worker, housekeeper, or cleaner
- Lab technician, lab technologist, or assistant in a medical or clinical laboratory
- Licensed practical nurse (LPN) or licensed vocational nurse (LVN)
- Medical instrument preparer, central supply worker, or endoscopy technician
- Nursing assistant, nurse technician, nurse support assistant, patient care technician, patient support, or orderly
- Operating room technician
- Registered nurse (RN)
- Respiratory therapist or respiratory technician
- Other, please specify

### 40 In what type of facility do you *currently* work?\*

- Hospital
- Nursing home
- Both hospital and nursing home
- Other, please specify

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44.86%

## Screen 47

41 Where do you work in the facility? Please mark the single best answer.\*

- Administration
- Central supply
- Dental
- Dialysis
- Ear, nose, and throat (ENT)
- Education
- Emergency room (ER)
- Endoscopy
- Float or multiple locations
- General or internal medicine
- Intensive care
- Labor and delivery
- Laboratory, medical or clinical
- Non-patient care area
- Outpatient care
- Patient care ward
- Pediatric
- Psychiatric
- Pulmonary
- Surgery or operating room
- Other location, please specify

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45.79%

## Screen 48

42 How many hours do you typically work per week in your *current* job?

Hours per week

43 What year did you begin your *current* job?

Year:

44 In this job, are you regularly exposed to vapors, gases, dusts, or fumes?\*

- No
- Yes
- Don't Know

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46.73%

## Screen 49

44.1 To what vapors, gases, dusts, or fumes are you exposed regularly? *Please write in answer.*

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Save progress

47.66%

## Screen 50

45 In the last 12 months, did you observed any of the following in the area(s) where you work?

Water leakage or water damage indoors on walls, floors, or ceilings?

No  Yes  Don't Know

Visible mold growth (not on food) indoors on walls, floors, or ceilings?

No  Yes  Don't Know

Odor of mold or mildew (not from food)?

No  Yes  Don't Know

46 In the last 12 months, did you observe any of the following renovations or construction in, or next to, the area(s) where you work?

Painting walls and fixtures?

No  Yes  Don't Know

Ripping out and replacing walls, woodwork, and partitions?

No  Yes  Don't Know

Ripping out and replacing floors, carpets, and fixed furniture?

No  Yes  Don't Know

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48.6%

## Screen 51

### Use of Hand Sanitizers

47 How many times on a typical day, both at home and at work, do you disinfect your hands with liquid hand sanitizers?

- Never
- 1-3 times per day
- 4-10 times per day
- More than 10 times per day

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49.53%

## Screen 52

*Thinking about your current job and what you have done in this job in the last 12 months:*

### Sterilizing Medical Instruments

48 Do you sterilize or high-level disinfect medical instruments, including dental instruments or ventilator parts, in central supply or other locations such as endoscopy and bronchoscopy units, hemodialysis units, operating rooms, or other clinical settings? \*

- No
- Yes

### Cleaning Fixed Surfaces, Equipment or Instruments

49 Do you clean or disinfect fixed surfaces, equipment, or instruments?  
Examples of fixed surfaces are: counter tops, floors, beds, and bathrooms.  
Examples of equipment are: IV poles, monitors, carts, and computers.  
Examples of instruments are: blood pressure cuffs, and stethoscopes.\*

- No
- Yes

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50.47%

**Screen 53**

## Sterilizing Medical Instruments

50.1 Which of the following sterilants or high-level disinfectants do you use to sterilize medical instruments?

Acetic acid

No  Yes  Don't Know

Alcohol, such as ethanol or isopropanol

No  Yes  Don't Know

Bleach or chlorine, such as Clorox®

No  Yes  Don't Know

Enzymatic cleaners, such as Asepti-Zyme®, 3M Rapid Multi-Enzyme®

No  Yes  Don't Know

Ethylene oxide in compressed-gas cylinders, single-dose cartridges or glass ampules

No  Yes  Don't Know

Formaldehyde

No  Yes  Don't Know

Glutaraldehydes such as Cidex®, Metricide®, Rapicide®, Wavicide®, Aldahol III®, Sporicidin

No  Yes  Don't Know

Hydrogen peroxides such as Accell®, Optim®, Resert XL®, Sporox®, Acecide®, EndoSpore Plus®, Metrex®, Peract®, Sterad®

No  Yes  Don't Know

Hypochlorite or hypochlorous acids such as Sterilox®

No  Yes  Don't Know

Ortho-phthalaldehydes such as Cidex OPA®, Opaciden®

No  Yes  Don't Know

Peracetic acid such as Steris®

No  Yes  Don't Know

Please write any other sterilizing or high-level disinfecting chemicals or product names you use

1.

2.

3.

4.

5.

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Save progress

51.4%

**Screen 54**

Please indicate how many days per week you use these products and the type of gloves used. "Yes" was not selected for any chemicals or no answers were selected. Please select "Next" to continue with the survey.

**Acetic acid**

Days per week      Gloves Worn  
--Please Select--      --Please Select--

**Alcohol, such as ethanol or isopropano**

Days per week      Gloves Worn  
--Please Select--      --Please Select--

**Bleach or chlorine, such as Clorox®**

Days per week      Gloves Worn  
--Please Select--      --Please Select--

**Enzymatic cleaners, such as Asepti-Zyme®, 3M Rapid Multi-Enzyme®**

Days per week      Gloves Worn  
--Please Select--      --Please Select--

**Ethylene oxide in compressed-gas cylinders, single-dose cartridges or glass ampules**

Days per week      Gloves Worn  
--Please Select--      --Please Select--

**Formaldehyde**

Days per week      Gloves Worn  
--Please Select--      --Please Select--

**Glutaraldehydes such as Cidex®, Metricide®, Rapicide®, Wavicide®, Aldahol III®, Sporicidin®**

Days per week      Gloves Worn  
--Please Select--      --Please Select--

**Hydrogen peroxides such as Accell®, Optim®, Resert XL®, Sporox®, Acecide®, Endo Spor Plus®, Metrex®, Peract®, Sterad®**

Days per week      Gloves Worn  
--Please Select--      --Please Select--

**Hypochlorite or hypochlorous acids such as Sterilox®**

Days per week      Gloves Worn  
--Please Select--      --Please Select--

**Ortho-phthalaldehydes such as Cidex OPA®, Opaciden®**

Days per week      Gloves Worn  
--Please Select--      --Please Select--

**Peracetic acid such as Steris®**

Days per week      Gloves Worn  
--Please Select--      --Please Select--

**Test**

Days per week      Gloves Worn  
--Please Select--      --Please Select--

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52.34%



## Screen 55

**On a typical day when you use sterilants or high-level disinfectants**

**50.2 How many times per day do you use these products?**

1-3 times per day  4-10 times per day  More than 10 times per day

**50.3 how many hours per day do you use these products?**

Less than 1 hour per day  1-4 hours per day  More than 4 hours per day

**50.4 In the last 12 months, have you ever prepared medical instruments for sterilization by manually disassembling instruments, removing gross contaminants, or flushing gross contaminants and waste?\***

No  Yes  Don't Know

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## Screen 56

**50.4.1 When you remove gross contaminants and waste from scopes and instruments, please indicate how many days per week, times per day, duration of task, and the type of gloves used when you perform this task.**

	Days per week	Times per day	Duration of task in minutes	Gloves worn
-	--Please Select--	--Please Select--	--Please Select--	--Please Select--

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## Screen 57

**50.5 In the last 12 months, have you ever prepared medical instruments for sterilization by refilling or changing sterilization solutions?\***

No  Yes  Don't Know

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## Screen 58

**50.5.1 When you refill or change sterilization solutions, please indicate how many days per week, times per day, duration of task, and the type of gloves used when you perform this task.**

	Days per week	Times per day	Duration of task in minutes	Gloves worn
.	--Please Select--	--Please Select--	--Please Select--	--Please Select--

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## Screen 59

**50.6 In the last 12 months, have you ever manually sterilized medical instruments?\***

No  Yes  Don't Know

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## Screen 60

**50.6.1 When you manually sterilize medical instruments, please indicate how many days per week, times per day, duration of task, and the type of gloves used when you perform this task.**

Days per week	Times per day	Duration of task in minutes	Gloves worn
--Please Select--	--Please Select--	--Please Select--	--Please Select--

**50.6.2 Do you use a sterilants immersion container when you manually sterilize or high-level disinfect medical instruments?\***

No  Yes  Don't Know

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## Screen 61

**50.6.2.1 What conditions apply when using a sterilants immersion container?**

**Enclosed box or exhaust hood used**

No  Yes  Don't Know

**Emersion box equipped with a tight fitting lid**

No  Yes  Don't Know

**Local exhaust ventilation is used in room**

No  Yes  Don't Know

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## Screen 62

**50.7 In the last 12 months, have you ever sterilized medical instruments using automated systems?\***

No  Yes  Don't Know

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## Screen 63

**50.7.1 Which tasks do you perform to sterilize medical instruments using automated systems?**

**Operate Ethylene oxide sterilizer**

No  Yes  Don't Know

**Operate plasma hydrogen peroxide Sterad® system**

No  Yes  Don't Know

**Operate Steris® system**

No  Yes  Don't Know

**Conduct maintenance on systems, such as cleaning or replacing screens and filters**

No  Yes  Don't Know

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## Screen 64

*Please indicate how many days per week, times per day, duration of task, and the type of controls used. "Yes" was not selected for any chemicals or no answers were selected. Please select "Next" to continue with the survey.*

**Operate Ethylene oxide sterilizer**

Days per week	Times per day	Duration of Task	Is system enclosed?	Is local exhaust ventilation used?
--Please Select--	--Please Select--	--Please Select--	--Please Select--	--Please Select--

**Operate plasma hydrogen peroxide Sterad® system**

Days per week	Times per day	Duration of Task	Is system enclosed?	Is local exhaust ventilation used?
--Please Select--	--Please Select--	--Please Select--	--Please Select--	--Please Select--

**Operate Steris® system**

Days per week	Times per day	Duration of Task	Is system enclosed?	Is local exhaust ventilation used?
--Please Select--	--Please Select--	--Please Select--	--Please Select--	--Please Select--

**Conduct maintenance on systems, such as cleaning or replacing screens and filters**

Days per week	Times per day	Duration of Task	Is system enclosed?	Is local exhaust ventilation used?
--Please Select--	--Please Select--	--Please Select--	--Please Select--	--Please Select--

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## Screen 65

50.8 Do you rinse or flush sterilized medical instruments with alcohol?\*

No  Yes

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## Screen 66

50.8.1 After rinsing or flushing with alcohol, do you use forced air to dry medical instruments?

No  Yes

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**Screen 67**

## Cleaning Fixed Surfaces, Equipment or Instruments

51.1 Which cleaners or disinfectants do you use for cleaning fixed surfaces, equipment, or instruments?

Glass cleaning products such as Windex®

No  Yes  Don't Know

Acids

No  Yes  Don't Know

Alcohol, such as ethanol and isopropanol

No  Yes  Don't Know

Ammonia

No  Yes  Don't Know

Bleach or chlorine, such as Clorox®

No  Yes  Don't Know

Detergents

No  Yes  Don't Know

Enzymatic cleaners such as Asepti-Zyme®, 3M Rapid Multi-Enzyme

No  Yes  Don't Know

Floor wax stripper

No  Yes  Don't Know

Phenolics, such as 3M Phenolic Disinfectant 18®, WexCide®, MicroBakII®, Megacide®, Novigard®, Sporicidin®

No  Yes  Don't Know

Quaternary ammonium compounds "Quats", such as 3M Neutral Quat 23®, 3M HB Quat 25®, Sani-Cloth Plus®, Oasis®, Staphene®, BTC100®, BioQuat®, Sentinel®

No  Yes  Don't Know

Please write any other cleaning or disinfection chemicals or products you use for cleaning fixed surfaces, equipment, or instruments

1.

2.

3.

4.

5.

6.

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65.42%

## Screen 68

Please indicate how many days per week you use these products and the type of gloves used.

"Yes" was not selected for any chemicals or no answers were selected. Please select "Next" to continue with the survey.

### Glass cleaning products such as Windex®

Days per week      Gloves Worn  
--Please Select--    --Please Select--

### Acids

Days per week      Gloves Worn  
--Please Select--    --Please Select--

### Alcohol, such as ethanol and isopropanol

Days per week      Gloves Worn  
--Please Select--    --Please Select--

### Ammonia

Days per week      Gloves Worn  
--Please Select--    --Please Select--

### Bleach or chlorine, such as Clorox®

Days per week      Gloves Worn  
--Please Select--    --Please Select--

### Detergents

Days per week      Gloves Worn  
--Please Select--    --Please Select--

### Enzymatic cleaners such as Asepti-Zyme®, 3M Rapid Multi-Enzyme®

Days per week      Gloves Worn  
--Please Select--    --Please Select--

### Floor wax stripper

Days per week      Gloves Worn  
--Please Select--    --Please Select--

### Phenolics, such as 3M Phenolic Disinfectant 18®, WexCide®, MicroBakII®, Megacide®, Novigard®, Sporicidin®

Days per week      Gloves Worn  
--Please Select--    --Please Select--

### Quaternary ammonium compounds "Quats", such as 3M Neutral Quat 23®, 3M HB Quat 25®, Sani-Cloth Plus®, Oasis®, Staphene®, BTC100®, BioQuat®, Sentinel®

Days per week      Gloves Worn  
--Please Select--    --Please Select--

### Test

Days per week      Gloves Worn  
--Please Select--    --Please Select--

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66.36%

## Screen 69

On a typical day when you use cleaners or disinfectants on fixed surfaces, equipment, or instruments:

51.2 How many times per day do you use these products?

- 1-3 times per day
- 4-10 times per day
- More than 10 times per day

51.3 How many hours per day do you use these products?

- Less than 1 hour per day
- 1-4 hours per day
- More than 4 hours per day

51.4 Do you use more sprays or more wipes, or do you use both equally often? *Select the ONE best answer.*

- Use more sprays than wipes
- Use more wipes than sprays
- Use sprays and wipes about equally
- Not sure which I use more

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67.23%



## Screen 70

51.5 At work, which tasks do you perform when cleaning or disinfecting fixed surfaces, equipment, or instruments?

Wipe down beds, furniture, counters, walls, etc.

No  Yes  Don't Know

Cleanup spills or blood

No  Yes  Don't Know

Manually mix, refill, or empty cleaning or disinfecting products

No  Yes  Don't Know

Clean bathrooms including toilet, sink, shower

No  Yes  Don't Know

Spray then wipe glass, windows, mirrors

No  Yes  Don't Know

Polish wood furniture

No  Yes  Don't Know

Polish stainless steel surfaces

No  Yes  Don't Know

Spray deodorant/ disinfectant

No  Yes  Don't Know

Mop floors

No  Yes  Don't Know

Clean equipment such as scissors, stethoscopes, and thermometers, IV poles, carts, monitors, and computers

No  Yes  Don't Know

Conduct terminal cleaning of patient rooms

No  Yes  Don't Know

Use fogging equipment when conducting terminal cleaning of patient rooms

No  Yes  Don't Know

Clean or disinfect for MRSA, VRE or other drug resistant bacteria in patient rooms

No  Yes  Don't Know

Conduct end of shift cleaning of operating rooms, dialysis units or other patient care areas

No  Yes  Don't Know

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68.22%

**Screen 71**

Please indicate how many days per week, times per week, duration of task, and the type of gloves used.

Wipe down beds, furniture, counters, walls, etc.

Days per week	Times per day	Duration of Task	Gloves Worn
--Please Select--	--Please Select--	--Please Select--	--Please Select--

Cleanup spills or blood

Days per week	Times per day	Duration of Task	Gloves Worn
--Please Select--	--Please Select--	--Please Select--	--Please Select--

Manually mix, refill, or empty cleaning or disinfecting products

Days per week	Times per day	Duration of Task	Gloves Worn
--Please Select--	--Please Select--	--Please Select--	--Please Select--

Clean bathrooms including toilet, sink, shower

Days per week	Times per day	Duration of Task	Gloves Worn
--Please Select--	--Please Select--	--Please Select--	--Please Select--

Spray then wipe glass, windows, mirrors

Days per week	Times per day	Duration of Task	Gloves Worn
--Please Select--	--Please Select--	--Please Select--	--Please Select--

Polish wood furniture

Days per week	Times per day	Duration of Task	Gloves Worn
--Please Select--	--Please Select--	--Please Select--	--Please Select--

Polish stainless steel surfaces

Days per week	Times per day	Duration of Task	Gloves Worn
--Please Select--	--Please Select--	--Please Select--	--Please Select--

Spray deodorant/ disinfectant

Days per week	Times per day	Duration of Task	Gloves Worn
--Please Select--	--Please Select--	--Please Select--	--Please Select--

Mop floors

Days per week	Times per day	Duration of Task	Gloves Worn
--Please Select--	--Please Select--	--Please Select--	--Please Select--

Clean equipment such as scissors, stethoscopes, and thermometers, IV poles, carts, monitors, and computers

Days per week	Times per day	Duration of Task	Gloves Worn
--Please Select--	--Please Select--	--Please Select--	--Please Select--

Conduct terminal cleaning of patient rooms

Days per week	Times per day	Duration of Task	Gloves Worn
--Please Select--	--Please Select--	--Please Select--	--Please Select--

Use fogging equipment with hydrogen peroxide or peracetic acid vapors to conduct terminal cleaning of patient rooms

Days per week	Times per day	Duration of Task	Gloves Worn
--Please Select--	--Please Select--	--Please Select--	--Please Select--

Clean or disinfect for MRSA, VRE or other drug resistant bacteria in patient rooms

Days per week	Times per day	Duration of Task	Gloves Worn
--Please Select--	--Please Select--	--Please Select--	--Please Select--

Conduct end of shift cleaning of operating rooms, dialysis units or other patient care areas

Days per week	Times per day	Duration of Task	Gloves Worn
--Please Select--	--Please Select--	--Please Select--	--Please Select--

## Screen 72

**51.6 In the last 12 months, have you cleaned and waxed floors using strippers and buffers?\***

No  Yes  Don't Know

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## Screen 73

**51.6.1 Which tasks do you perform when cleaning and waxing floors using strippers and buffers?**

**Strip floors**

No  Yes  Don't Know

**Scrape floors**

No  Yes  Don't Know

**Buff floors**

No  Yes  Don't Know

**Wax floors**

No  Yes  Don't Know

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## Screen 74

*Please indicate how many days per week, times per day, duration of task, and the type of gloves used. "Yes" was not selected for any chemicals or no answers were selected. Please select "Next" to continue with the survey.*

**Strip floors**

Days per week	Times per day	Duration of Task	Gloves Worn
--Please Select--	--Please Select--	--Please Select--	--Please Select--

**Scrape floors**

Days per week	Times per day	Duration of Task	Gloves Worn
--Please Select--	--Please Select--	--Please Select--	--Please Select--

**Buff floors**

Days per week	Times per day	Duration of Task	Gloves Worn
--Please Select--	--Please Select--	--Please Select--	--Please Select--

**Wax floors**

Days per week	Times per day	Duration of Task	Gloves Worn
--Please Select--	--Please Select--	--Please Select--	--Please Select--

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## Screen 75

### Exposure to Chemicals Used in Medical or Clinical Laboratories

*Thinking about your current job and what you have done in this job in the last 12 months:*

52 Have you worked in a clinical or medical laboratory?\*

No  Yes

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72.9%

## Screen 76

52.1 Which tasks do you perform or use when you work in the clinical or medical laboratory?

Use formalin to fix gross tissue and autopsy specimens

No  Yes  Don't Know

Use stains and dyes such as hematoxylin and eosin stains

No  Yes  Don't Know

Use solvents such as xylene and toluene to fix tissue specimens and rinse stains

No  Yes  Don't Know

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73.83%

## Screen 77

Please indicate how many days per week, times per day, duration of task, and the type of controls present.  
"Yes" was not selected for any chemicals or no answers were selected. Please select "Next" to continue with the survey.

**Use formalin to fix gross tissue and autopsy specimens**

Days per week	Times per day	Duration of Task	Tasks performed in a fume hood	Task performed using bench-top local exhaust ventilation?
--Please Select--	--Please Select--	--Please Select--	--Please Select--	--Please Select--

**Use stains and dyes such as hematoxylin and eosin stains**

Days per week	Times per day	Duration of Task	Tasks performed in a fume hood	Task performed using bench-top local exhaust ventilation?
--Please Select--	--Please Select--	--Please Select--	--Please Select--	--Please Select--

**Use solvents such as xylene and toluene to fix tissue specimens and rinse stains**

Days per week	Times per day	Duration of Task	Tasks performed in a fume hood	Task performed using bench-top local exhaust ventilation?
--Please Select--	--Please Select--	--Please Select--	--Please Select--	--Please Select--

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74.77%

## Screen 78

**Exposure to Products Used on Patients**

Thinking about your current job and what you have done in this job in the last 12 months:

53 Do you use chemicals, adhesives, antiseptics, alcohols, or solvents, such as solutions to remove adhesives, iodine, hydrogen peroxide, super glue, bone cement, alcohols, alcohol preps, mineral spirits, or toluene, on patients?\*

No    Yes

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75.7%

## Screen 79

53.1 Which tasks do you perform when you apply or use chemicals, antiseptics, adhesives, alcohols, or solvents on patients?

Disinfect skin areas on patients prior to procedure using wipes, gauze or swabs with antiseptics such as alcohols, iodine, acetic acid to

No  Yes  Don't Know

Clean and disinfect wounds using antiseptics such as, silver compounds, chlorhexidine, povidone iodine or cadexomer iodine

No  Yes  Don't Know

Apply wound dressing such as polyurethane based hydrogel, hydrocolloid, or hydrocellular foam

No  Yes  Don't Know

Use adhesives such as glues, acrylates, bone cements, benzoin tincture such as 3M® Steri-Strip® for surgery, skin closure, bone repair, ostomy bags, and other applications

No  Yes  Don't Know

Use adhesive removing solvents such as alcohols, acetone with wipes, gauze or swabs

No  Yes  Don't Know

Apply synthetic fiberglass casts

No  Yes  Don't Know

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76.64%

## Screen 80

Please indicate how many days per week, times per day, duration of task, and the type of gloves used. "Yes" was not selected for any chemicals or no answers were selected. Please select "Next" to continue with the survey.

Disinfect skin areas on patients prior to procedure using wipes, gauze or swabs with antiseptics such as alcohols, iodine, acetic acid to

Days per week Times per day Duration of Task Gloves Worn  
--Please Select-- --Please Select-- --Please Select-- --Please Select--

Clean and disinfect wounds using antiseptics such as, silver compounds, chlorhexidine, povidone iodine or cadexomer iodine

Days per week Times per day Duration of Task Gloves Worn  
--Please Select-- --Please Select-- --Please Select-- --Please Select--

Apply wound dressing such as polyurethane based hydrogel, hydrocolloid, or hydrocellular foam

Days per week Times per day Duration of Task Gloves Worn  
--Please Select-- --Please Select-- --Please Select-- --Please Select--

Use adhesives such as glues, acrylates, bone cements, benzoin tincture such as 3M® Steri-Strip® for surgery, skin closure, bone repair, ostomy bags, and other applications

Days per week Times per day Duration of Task Gloves Worn  
--Please Select-- --Please Select-- --Please Select-- --Please Select--

Use adhesive removing solvents such as alcohols, acetone with wipes, gauze or swabs

Days per week Times per day Duration of Task Gloves Worn  
--Please Select-- --Please Select-- --Please Select-- --Please Select--

Apply synthetic fiberglass casts

Days per week Times per day Duration of Task Gloves Worn  
--Please Select-- --Please Select-- --Please Select-- --Please Select--

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## Screen 81

Exposure to Aerosolized Medicines Used with Patients

Thinking about your current job and what you have done in this job in the last 12 months:

54 Do you administer aerosolized medications that might include antibiotics such as Tobramycin, Amikacin, and Colistin, or other medications like pentamidine, ribavirin, bronchodilators, anesthetics, and antitrypsin?\*

No  Yes

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## Screen 82

**54.1 Which tasks do you perform when you administer aerosolized medications**

**Administer aerosolized medications with a small volume nebulizer (SVN)**

No  Yes  Don't Know

**Use continuous aerosol delivery system for bronchodilators and other medicines**

No  Yes  Don't Know

**Administer aerosolized medications with a metered-dose inhaler (MDI)**

No  Yes  Don't Know

**Administer aerosolized medications with a dry powder inhaler (DPI)**

No  Yes  Don't Know

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## Screen 83

*Please indicate how many days per week, times per week, duration of task, and the type of gloves used when you administer aerosolized medications.*

"Yes" was not selected for any chemicals or no answers were selected. Please select "Next" to continue with the survey.

**Administer aerosolized medications with a small volume nebulizer (SVN)**

Days per week	Times per day	Duration of Task	Gloves Worn
--Please Select-- ▼	--Please Select-- ▼	--Please Select-- ▼	--Please Select-- ▼

**Use continuous aerosol delivery system for bronchodilators and other medicines**

Days per week	Times per day	Duration of Task	Gloves Worn
--Please Select-- ▼	--Please Select-- ▼	--Please Select-- ▼	--Please Select-- ▼

**Administer aerosolized medications with a metered-dose inhaler (MDI)**

Days per week	Times per day	Duration of Task	Gloves Worn
--Please Select-- ▼	--Please Select-- ▼	--Please Select-- ▼	--Please Select-- ▼

**Administer aerosolized medications with a dry powder inhaler (DPI)**

Days per week	Times per day	Duration of Task	Gloves Worn
--Please Select-- ▼	--Please Select-- ▼	--Please Select-- ▼	--Please Select-- ▼

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## Screen 84

**54.2. What percent of the time do you use any respirator, other than a surgical mask, when administering aerosolized medication?\***

Never  About 25% of the time  About 50% of the time  About 75% of the time  100% of the time

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## Screen 85

**54.2.1 Do you use the following types of respirators when administering aerosolized medication?**

**Particulate respirator such as an N95**

No  Yes  Don't Know

**Air purifying half mask**

No  Yes  Don't Know

**Air purifying full face piece**

No  Yes  Don't Know

**Powered air purifying**

No  Yes  Don't Know

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## Screen 86

**Exposure to Chemicals used by Dental Assistants**

*Thinking about your current job and what you have done in this job in the last 12 months:*

**55 Have you worked as a dental assistant?\***

No  Yes

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## Screen 87

**55.1 Which tasks do you perform as a dental assistant?**

**Adjust, polish or repair dentures or use compunds such as methyl methacrylates, other acrylates, and epoxy**

No  Yes  Don't Know

**Prepare amalgams such as Vertex Soft®, Villacryl Soft®, Molloplast B®,and Mollosil®**

No  Yes  Don't Know

**Develop x-rays using film developing solutions**

No  Yes  Don't Know

**Use adhesives to place dentures or attach braces**

No  Yes  Don't Know

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## Screen 88

*Please indicate how many days per week, times per day, duration of task, and the type of gloves used. "Yes" was not selected for any chemicals or no answers were selected. Please select "Next" to continue with the survey.*

**Adjust, polish or repair dentures or use compunds such as methyl methacrylates, other acrylates, and epoxy**

Days per week	Times per day	Duration of Task	Gloves Worn
--Please Select--	--Please Select--	--Please Select--	--Please Select--

**Prepare amalgams such as Vertex Soft®, Villacryl Soft®, Molloplast B®,and Mollosil®**

Days per week	Times per day	Duration of Task	Gloves Worn
--Please Select--	--Please Select--	--Please Select--	--Please Select--

**Develop x-rays using film developing solutions**

Days per week	Times per day	Duration of Task	Gloves Worn
--Please Select--	--Please Select--	--Please Select--	--Please Select--

**Use adhesives to place dentures or attach braces**

Days per week	Times per day	Duration of Task	Gloves Worn
--Please Select--	--Please Select--	--Please Select--	--Please Select--

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## Screen 89

### Employment 5 Years Ago

*If you had more than one job 5 years ago, record information for the job where you worked the most hours per week.*

**56 Please check the ONE box that best describes your employment status 5 years ago.\***

- Employed in the healthcare industry
- Employed outside the healthcare industry
- Disabled
- On family leave
- On extended sick leave
- Retired
- Student
- Other, please specify:

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85.58%

## Screen 90

56.1 Please check the ONE box that best describes the type of industry your job was in 5 years ago.

*If you had more than one job 5 years ago, record information for the job where you worked the most hours per week.\**

- Agriculture, forestry, and fishing
- Construction trades
- Healthcare and social assistance
- Manufacturing
- Mining
- Oil and gas extraction
- Public safety
- Services, such as finance, real estate, education, hospitality, repair, or human resources
- Transportation, warehousing, and utilities
- Wholesale and retail trade
- Other, please specify:

56.2 Please write in the title for the job you had 5 years ago.

Job title:

56.3 What did you do at the job you had 5 years ago?

56.4 What was the name of the company where you worked 5 years ago?

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86.92%

## Screen 91

### Healthcare Employment 5 Years Ago

*If you had more than one job 5 years ago, record information for job where you worked the most hours per week.*

#### 57 What was your occupation 5 years ago?\*

- Dental assistant
- Environmental service worker, housekeeper, or cleaner
- Lab technician, lab technologist, or assistant in a medical or clinical laboratory
- Licensed practical nurse (LPN) or licensed vocational nurse (LVN)
- Medical instrument preparers, central supply worker, or endoscopy technician
- Nursing assistant, nurse technician, nurse support assistant, patient care technician, patient support or orderly
- Operating room technician
- Registered nurse (RN)
- Respiratory therapist or respiratory technician
- Other, please specify

#### 58 In which unit did you work 5 years ago?\*

- Hospital
- Nursing home
- Both hospital and nursing home
- Other, please specify

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87.85%

## Screen 92

### 59 Where did you work in the facility 5 years ago?\*

- Administration
- Central supply
- Dental
- Dialysis
- Ear, nose, and throat (ENT)
- Education
- Emergency room (ER)
- Endoscopy
- Float or multiple locations
- General or internal medicine
- Intensive care
- Labor and delivery
- Laboratory, medical or clinical
- Non-patient care area
- Outpatient care
- Patient care ward
- Pediatric
- Psychiatric
- Pulmonary
- Surgery or operating room
- Other location, please specify

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88.79%

## Screen 93

*Thinking about the job you had 5 years ago.*

60 Did you sterilize or high-level disinfect medical instruments, including dental instruments and ventilator parts, in central supply or other locations such as endoscopy and bronchoscopy units, hemodialysis units, operating rooms, or other clinical settings?\*

No  Yes  Don't Know

61 Did you clean or disinfect fixed surfaces, equipment, or instruments?  
Examples of fixed surfaces are: countertops, floors, beds, and bathrooms.  
Examples of equipment are: IV poles, monitors, carts, and computers.  
Examples of instruments are: blood pressure cuffs and stethoscopes.\*

No  Yes  Don't Know

62 Did you clean and wax floors using strippers and buffers?\*

No  Yes  Don't Know

63 Did you work in a medical or clinical laboratory?\*

No  Yes  Don't Know

64 Did you use chemicals, adhesives, antiseptics, alcohols, or solvents, such as solutions to remove adhesives, iodine, hydrogen peroxide, super glue, bone cement, alcohols, alcohol preps, mineral spirits, or toluene, on patients?\*

No  Yes  Don't Know

65 Did you administer aerosolized medications that might include antibiotics, such as Tobramycin, Amikacin, Colistin, pentamidine, ribavirin, bronchodilators, anesthetics, and antitrypsin?\*

No  Yes  Don't Know

66 Did you work as a dental assistant?\*

No  Yes  Don't Know

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89.72%



## Screen 94

**67 How many hours per week did you work in the job you had 5 years ago?**

hours per week

**68 What year did you begin that job?**

Year

**69 What year did you stop working in that job?**

Year

**70 Were you regularly exposed to vapors, gases, dust, or fumes in that job?**

No  Yes  Don't Know

**71 Thinking about the job you had 5 years ago, did you observe any of the following in the building where you worked?**

**Water leakage or water damage indoors on walls, floors, or ceilings?**

No  Yes  Don't Know

**Visible mold growth (not on food) indoors on walls, floors, or ceilings?**

No  Yes  Don't Know

**Odor of mold or mildew (not from food)?**

No  Yes  Don't Know

**72 Thinking about the job you had 5 years ago, did you observe any renovations or construction in, or next to, the area(s) where you work?**

No  Yes  Don't Know

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90.55%

## Screen 95

**Changing Jobs**

**73 Have you ever had to change or leave a job or position because it affected your breathing? This would include changing jobs or positions within the same workplace.**

No  Yes  Don't Know

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91.59%

**Screen 96**

*If this happened more than once, please answer the following questions about the most recent time you changed or left a job or position because it affected your breathing.*

**73.1 In which year did you change or leave this job or position?**

Year

**73.2 What kind of job or position did you change or leave?**

**73.3 Please check the ONE box that best describes what industry the job or position you changed or left was in.**

- Agriculture, forestry, and fishing
- Construction trades
- Health care and social assistance
- Manufacturing
- Mining
- Oil and gas extraction
- Public safety
- Services, such as finance, real estate, education, hospitality, repair, or human resources
- Transportation, warehousing, and utilities
- Wholesale and retail trade
- Other, please specify

*If this happened more than once, please answer the following questions about the most recent time you changed or left a job or position because it affected your breathing.*

**73.4 What had you done in the job or position you changed or left?**

*If this happened more than once, please answer the following questions about the most recent time you changed or left a job or position because it affected your breathing.*

**73.5 What exposure or activity affected your breathing in the job or position you changed or left?**

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92.52%

## Screen 97

*If this happened more than once, please answer the following questions about the most recent time you changed or left a job or position because it affected your breathing.*

**73.6** Concerning the job or position you went to: What kind of job or position did you go to?

*If this happened more than once, please answer the following questions about the most recent time you changed or left a job or position because it affected your breathing.*

**73.7** Please check the ONE box that best describes what industry the job or position you went to was in.

- Agriculture, forestry, and fishing
- Construction trades
- Health care and social assistance
- Manufacturing
- Mining
- Oil and gas extraction
- Public safety
- Services, such as finance, real estate, education, hospitality, repair, or human resources
- Transportation, warehousing, and utilities
- Wholesale and retail trade
- Other, please specify

*If this happened more than once, please answer the following questions about the most recent time you changed or left a job or position because it affected your breathing.*

**73.8** What did you do in this new job or position?

*If this happened more than once, please answer the following questions about the most recent time you changed or left a job or position because it affected your breathing.*

**73.9** What was the name of the company where you worked at this new job?

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93.46%

## Screen 98

**Demographics**

**74 In what year were you born?**

Year

**75 What is your sex?\***

Male  
 Female

**76 Do you consider yourself Hispanic or Latino?**

No  Yes

**77 What is your race? *Mark one or more in the list below.***

American Indian or Alaska Native  
 Asian  
 Black or African American  
 Native Hawaiian or Other Pacific Islander  
 White

**78 What is the highest grade or level of education that you have completed?**

Less than a high school diploma  
 High school diploma or GED  
 Some college, vocational, or technical education  
 4 year college graduate (Bachelor's degree)  
 Graduate or Medical School  
 Other, *please specify*

94.33%

## Screen 99

**79 Have you smoked at least 100 cigarettes in your entire life?\***

No  Yes  Don't Know

95.33%

## Screen 100

**79.1 How old were you when you first started to smoke cigarettes fairly regularly?**

Years old

**79.2 Do you now smoke cigarettes, as of one month ago?**

No  Yes  Don't Know

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96.26%

## Screen 101

**79.2.1 How old were you when you last smoked cigarettes?**

Years old

**79.2.2 Before you stopped smoking, how many cigarettes did you usually smoke per day?**

**If less than 1 cigarette per day, enter 0**

Cigarettes per day

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97.2%

## Screen 102

**79.2.3 How many cigarettes do you usually smoke per day?**

**If less than 1 cigarette per day, enter 0**

Cigarettes per day

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98.13%

## Screen 103

80. On average, how many hours per week are you in close contact with people when they are smoking? For example, in your home, in a car, at work, or in other close quarters.

*(Enter 0 if you are not in close contact with people when they are smoking, or you are in close contact less than 1 hour per week.)*

Hours per week

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39.87%