**Appendix 3**

**-Online Questionnaire Form**

This study aims to assess indoor air quality and the problems related to the high percentage of pollutants in the residential apartments of the Russeifa, which negatively affects the health of the population in the long and short term. Accordingly, the importance of research lies in taking your opinions and participation to assess air quality by asking about issues related to air quality in Residential apartments.

Please participate in filling out this questionnaire for a few minutes for scientific research, noting that all your answers will be taken in strict confidence and without sharing with anyone.

**-Section one:** sociodemographic factors

Multiple choice questions include socio-demographic information of the respondents consisting of (gender, and age….).

|  |  |  |  |
| --- | --- | --- | --- |
| **Section 1: Multiple-Choice Basic Questions/ Demographical Data** | | | |
| **No.** | **Question** | **Answer options** | |
|  | What is your gender? | Female | Male |
|  | What is your age? | Less than 20  20-30  31-40  41-50  50 and above | |
|  | What is your marital status? | Married  Single | |
|  |  |  | |
| What is your educational level? | High School  Diploma-Bachelor  Postgraduate Studies (Master, PhD  Other | |
|  | Is the apartment you live in owned or rented? | Owned  Rent | |
|  | The period in which the apartments you live in were built? | 1948-1967  1967-1990  1991-2000  2001-2011  2011-2021 | |
|  | What level of the apartment do you live in? | Basement  Ground  First  Second  Third  Fourth | |
|  | How many people live in the apartment? | .................................... | |
|  | What is the area of the apartment you live in? | ..................................... | |
|  | What is the family's monthly income? | ...................................... | |

**-Section 2:** This section contains 4 factors to measure the relation between sick building syndrome and IAQ in residential buildings.

**Factor 1:** Occupant’s Activities.

The first factor covers the factor of Occupant’s Activities (smoking, cooking, cleaning, plantation) on IAQ and SBS

**Factor 2:** Architectural assessment.

The second-factor address the residential building design (spatial configuration of spaces, type of ventilation, finishing material).

**Factor 3:** Neighborhood assessment.

The third factor concerns the residents' satisfaction with the urban design of the area, empty spaces, alleyways, and the proximity and adhesion of buildings. On the other hand, concerns the residents' satisfaction with the urban design of the area, empty spaces, alleyways, and the proximity and adhesion of buildings

**Factor 4:** Health of occupants.

Assessment of short-term symptoms Long-term diseases associated with sick building syndrome

The second section was represented - fully satisfied (5) , satisfied (4), neutral (3) , dissatisfied (2), and deeply dissatisfied (1). As per the following format in the Likert scale.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Section 1: Occupants Behavior** | | | | | | |
| **No.** | **Question** | **Answer options** | | | | |
|  | I spend long periods of my day inside the house? | 1 | 2 | 3 | 4 | 5 |
|  | Family members and visitors are allowed to smoke (both smoke and hookah) inside the house | 1 | 2 | 3 | 4 | 5 |
|  | The house is ventilated by opening the windows during and after smoking inside the house | 1 | 2 | 3 | 4 | 5 |
|  | You will use the kitchen frequently and several times during the day to cook | 1 | 2 | 3 | 4 | 5 |
|  | The use of an electric gas hood, in addition to opening the windows, helps reduce the concentration of pollutants resulting from the cooking process | 1 | 2 | 3 | 4 | 5 |
|  | I prefer to use clean fuels instead of gas while cooking | 1 | 2 | 3 | 4 | 5 |
|  | The best present of house plants within the interior spaces of the house to help reduce stress and increase the productivity of the individual | 1 | 2 | 3 | 4 | 5 |
|  | It is better to use chemical detergents instead of water alone during cleaning | 1 | 2 | 3 | 4 | 5 |
|  | I notice a smell in the settlement area due to the lack of good ventilation and its proximity to natural soil, especially in the summer | 1 | 2 | 3 | 4 | 5 |
|  | I notice an accumulation of dust on the basement floor more than on the other floors | 1 | 2 | 3 | 4 | 5 |
|  | I prefer not to have a car park under the building | 1 | 2 | 3 | 4 | 5 |
|  | There is a door in the garage area through which to enter directly into the house | 1 | 2 | 3 | 4 | 5 |
| **Section 2: Residential Buildings Assessment** | | | | | | |
|  | You will use the kitchen frequently and several times during the day to cook | 1 | 2 | 3 | 4 | 5 |
|  | The use of an electric gas hood, in addition to opening the windows, helps reduce the concentration of pollutants resulting from the cooking process | 1 | 2 | 3 | 4 | 5 |
|  | I prefer to use clean fuels instead of gas while cooking | 1 | 2 | 3 | 4 | 5 |
|  | The best present of house plants within the interior spaces of the house to help reduce stress and increase the productivity of the individual | 1 | 2 | 3 | 4 | 5 |
|  | It is better to use chemical detergents instead of water alone during cleaning | 1 | 2 | 3 | 4 | 5 |
|  | I open the window during the process of cleaning the house with chemicals | 1 | 2 | 3 | 4 | 5 |
|  | The Corona pandemic has contributed to an increase in the consumption of sterilization and cleaning products inside the home | 1 | 2 | 3 | 4 | 5 |
|  | Take care to know if the chemical products and materials used in construction and interior finishes are environmentally friendly or no | 1 | 2 | 3 | 4 | 5 |
|  | I have enough information about the dangers of indoor air pollution and its negative impact on health at the long and near level | 1 | 2 | 3 | 4 | 5 |
|  | I usually eat in the kitchen area | 1 | 2 | 3 | 4 | 5 |
|  | It is better to close the doors of the rooms adjacent to the kitchen during the cooking process than to have the kitchen completely open to the living room | 1 | 2 | 3 | 4 | 5 |
|  | I notice a smell in the settlement area due to the lack of good ventilation and its proximity to natural soil, especially in the summer | 1 | 2 | 3 | 4 | 5 |
|  | I notice an accumulation of dust on the basement floor more than on the other floors | 1 | 2 | 3 | 4 | 5 |
|  | I prefer not to have a car park under the building | 1 | 2 | 3 | 4 | 5 |
|  | There is a door in the garage area through which to enter directly into the house | 1 | 2 | 3 | 4 | 5 |
|  | I notice (mold on ceilings or walls, and peeling paint) inside the house | 1 | 2 | 3 | 4 | 5 |
|  | I notice that there are many cracks in the outer structure of the house | 1 | 2 | 3 | 4 | 5 |
|  | Having an interior patio or wind trap helps increase the natural ventilation inside the house | 1 | 2 | 3 | 4 | 5 |
|  | The shape of the windows in the facade of the building and their orientation in the direction of the prevailing winds help to increase the effectiveness of natural ventilation | 1 | 2 | 3 | 4 | 5 |
|  | The interior finishes of the house include materials that cause the emission of pollutants such as (paint, adhesive, wooden floors, and gypsum decorations) | 1 | 2 | 3 | 4 | 5 |
|  | Have you carried out maintenance activities including (using adhesives, installing wooden materials, implementing gypsum plasters) or buying new furniture during the past six months? | 1 | 2 | 3 | 4 | 5 |
| **Section 3: Urban Design Assessment** | | | | | | |
|  | How satisfied are you with the outdoor air quality of the area | 1 | 2 | 3 | 4 | 5 |
|  | Buildings adhere to legal distances in the area | 1 | 2 | 3 | 4 | 5 |
|  | The design and cleanliness around the residential buildings in the area are good and used properly and do not turn into places for collecting waste | 1 | 2 | 3 | 4 | 5 |
|  | The general cleanliness of the residential area is satisfactory and good for the residents | 1 | 2 | 3 | 4 | 5 |
|  | There are green areas planted in the area | 1 | 2 | 3 | 4 | 5 |
|  | The density of buildings in the area is acceptable and does not affect the natural ventilation and indoor air quality | 1 | 2 | 3 | 4 | 5 |
|  | The height of the buildings is appropriate and does not block the sun from the neighboring buildings, which helps to maintain an acceptable level of humidity and the absence of mold | 1 | 2 | 3 | 4 | 5 |
|  | I think that the proximity of the building in which I live near (landfill, chemical plants, phosphate factories, the presence of a polluted stream) hurts the purity and quality of the outside air in the area | 1 | 2 | 3 | 4 | 5 |
|  | The location of the building (apartment) in which I live is on the main street or near a new construction site | 1 | 2 | 3 | 4 | 5 |
| **Section 4: Health of Occupants** | | | | | | |
|  | Have you ever been diagnosed with the new coronavirus? | 1 | 2 | 3 | 4 | 5 |
|  | Have you or any of your family members been diagnosed with respiratory distress? | 1 | 2 | 3 | 4 | 5 |
|  | I feel the following symptoms while I am inside the house (fatigue, headache, runny nose) and they ease or disappear when I leave it | 1 | 2 | 3 | 4 | 5 |
|  | The emergence or increase of allergy symptoms in family members after making new modifications inside the house (painting, decorating gypsum, installing wooden floors) | 1 | 2 | 3 | 4 | 5 |