

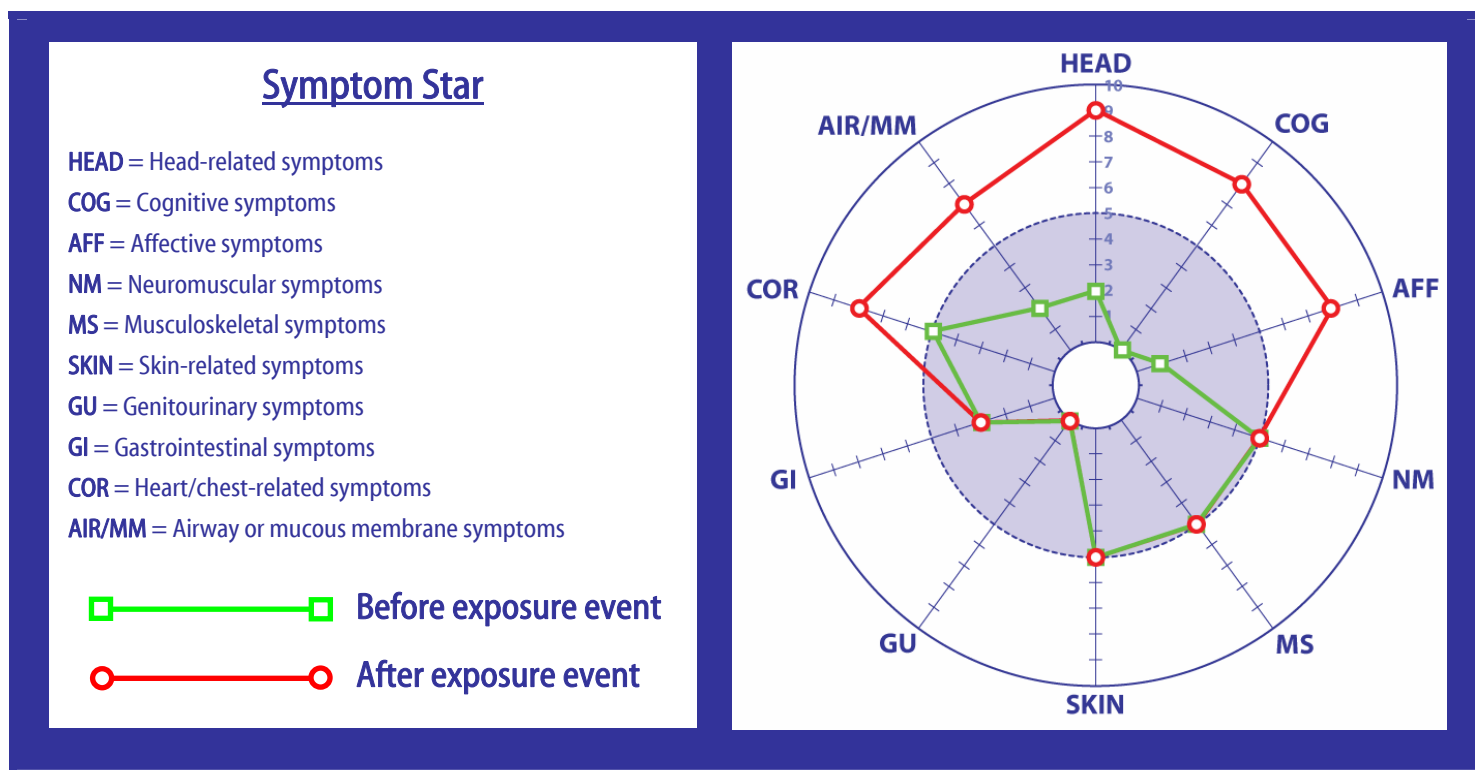
QEESI[®]

The **Quick Environmental Exposure and Sensitivity Inventory (QEESI[®])** was developed as a screening questionnaire for multiple chemical intolerances (MCI). The instrument has four scales: Symptom Severity, Chemical Intolerances, Other Intolerances, and Life Impact. Each scale contains 10 items, scored from 0 = “not a problem” to 10 = “severe or disabling problem.” A 10-item Masking Index gauges ongoing exposures that may affect individuals’ awareness of their intolerances as well as the intensity of their responses to environmental exposures. Potential uses for the QEESI[®] include:

1. Research—to characterize and compare study populations, and to select subjects and controls.
2. Clinical evaluations—to obtain a profile of patients’ self-reported symptoms and intolerances. The QEESI[®] can be administered at intervals to follow symptoms over time or to document responses to treatment or exposure avoidance.
3. Workplace or community investigations—to identify and assist those who may be more chemically susceptible or who report new intolerances. Affected individuals should have the option of discussing results with investigators or their personal physicians.

Individuals whose symptoms began or intensified following a particular exposure event can fill out the QEESI[®] using two different ink colors, one showing how they were before the event, and the second how they have been since the event. On the cover of the QEESI[®] is a “Symptom Star” (Figure 1) which provides a graphical representation of patients’ responses on the Symptom Severity Scale.

Figure 1. QEESI Symptom Star illustrating symptom severity in an individual before and after an exposure event (e.g., pesticide application, indoor air contaminants, chemical spill)



For additional copies of the QEESI[®], contact Claudia S. Miller, M.D., M.S., University of Texas Health Science Center at San Antonio, Department of Family and Community Medicine, 7703 Floyd Curl Drive (222 MCS), San Antonio, Texas 78229-3900. Phone: (210) 567-7407; fax: (210) 567-7457; email: millercs@uthscsa.edu. For further information see Chemical Exposures: Low Levels and High Stakes by Nicholas A. Ashford and Claudia S. Miller, John Wiley & Sons, 1998 (1-800-225-5945) <http://www.wiley.com>.

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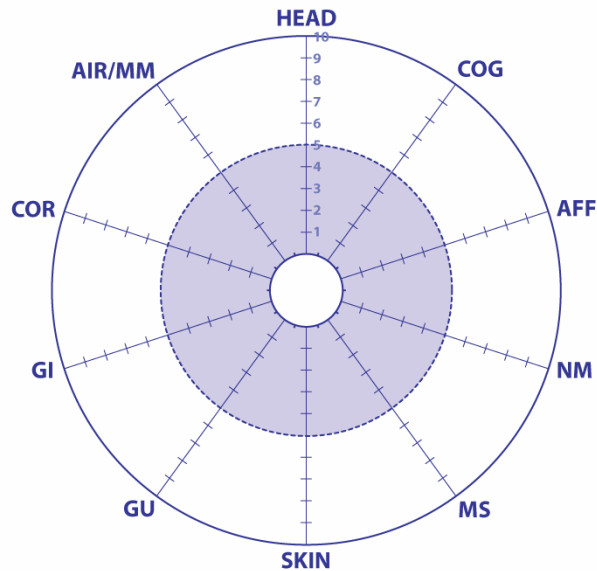
QEESI[®]

Quick Environmental Exposure and Sensitivity Inventory V-1

The purpose of this questionnaire is to help identify health problems you may be having and to understand your responses to various exposures. Complete pages 1-5, describing how you are now. Then fill in the "target" diagram below.

If your health problems began suddenly or became much worse after a particular exposure event, such as a pesticide exposure or moving to a new home or office building, then go back through pages 1-3 and indicate how you were before the exposure event. Use different colors or symbols (circles, squares) for "before" and "after."

Symptom Star



Instructions: Place page 3 so that it lies next to this page. Place a dot on the corresponding spoke for each symptom item. Connect these points. Indicate "before" and "after" scores by using different colors or dotted versus solid lines.

— Chemical Exposures —

The following items ask about your responses to various odors or chemical exposures. Please indicate whether or not these odors or exposures would make you feel sick, for example, you would get a headache, have difficulty thinking, feel weak, have trouble breathing, get an upset stomach, feel dizzy, or something like that. For any exposure that makes you feel sick, on a 0-10 scale rate the severity of your symptoms with that exposure. For exposures that do not bother you, answer "0." Do not leave any items blank.

For each item, circle one number only:
[0 = not at all a problem] [5 = moderate symptoms]
[10 = disabling symptoms]

1.	Diesel or gas engine exhaust	0 1 2 3 4 5 6 7 8 9 10
2.	Tobacco smoke	0 1 2 3 4 5 6 7 8 9 10
3.	Insecticide	0 1 2 3 4 5 6 7 8 9 10
4.	Gasoline, for example at a service station while filling the gas tank	0 1 2 3 4 5 6 7 8 9 10
5.	Paint or paint thinner	0 1 2 3 4 5 6 7 8 9 10
6.	Cleaning products such as disinfectants, bleach, bathroom cleansers or floor cleaners	0 1 2 3 4 5 6 7 8 9 10
7.	Certain perfumes, air fresheners or other fragrances	0 1 2 3 4 5 6 7 8 9 10
8.	Fresh tar or asphalt	0 1 2 3 4 5 6 7 8 9 10
9.	Nailpolish, nailpolish remover, or hairspray	0 1 2 3 4 5 6 7 8 9 10
10.	New furnishings such as new carpeting, a new soft plastic shower curtain or the interior of a new car	0 1 2 3 4 5 6 7 8 9 10

Total Chemical Intolerance Score (0-100):

Name any additional chemical exposures that make you feel ill and score them from 0 to 10: _____

— Other Exposures —

The following items ask about your responses to a variety of other exposures. As before, please indicate whether these exposures would make you feel sick. Rate the severity of your symptoms on a 0-10 scale. Do not leave any items blank.

For each item, circle one number only:
[0 = not at all a problem] [5 = moderate symptoms]
[10 = disabling symptoms]

1.	Chlorinated tap water	0 1 2 3 4 5 6 7 8 9 10
2.	Particular foods, such as candy, pizza, milk, fatty foods, meats, barbecue, onions, garlic, spicy foods, or food additives such as MSG	0 1 2 3 4 5 6 7 8 9 10
3.	Unusual cravings, or eating any foods as though you were addicted to them; or feeling ill if you miss a meal	0 1 2 3 4 5 6 7 8 9 10
4.	Feeling ill after meals	0 1 2 3 4 5 6 7 8 9 10
5.	Caffeine, such as coffee, tea, Snapple, cola drinks, Big Red, Dr. Pepper or Mountain Dew, or chocolate	0 1 2 3 4 5 6 7 8 9 10
6.	Feeling ill if you drink or eat less than your usual amount of coffee, tea, caffeinated soda or chocolate, or miss it altogether	0 1 2 3 4 5 6 7 8 9 10
7.	Alcoholic beverages in small amounts such as one beer or a glass of wine	0 1 2 3 4 5 6 7 8 9 10
8.	Fabrics, metal jewelry, creams, cosmetics, or other items that touch your skin	0 1 2 3 4 5 6 7 8 9 10
9.	Being unable to tolerate or having adverse or allergic reactions to any drugs or medications (such as antibiotics, anesthetics, pain relievers, x-ray contrast dye, vaccines or birth control pills), or to an implant, prosthesis, contraceptive chemical or device, or other medical, surgical or dental material or procedure	0 1 2 3 4 5 6 7 8 9 10
10.	Problems with any classical allergic reactions (asthma, nasal symptoms, hives, anaphylaxis or eczema) when exposed to allergens such as: tree, grass or weed pollen, dust, mold, animal dander, insect stings or particular foods	0 1 2 3 4 5 6 7 8 9 10

Total Other Intolerance Score (0-100):

— Symptoms —

The following questions ask about symptoms you may have experienced commonly. Rate the severity of your symptoms on a 0-10 scale. Do not leave any items blank.

For each item, circle one number only:
[0 = not at all a problem] [5 = moderate symptoms]
[10 = disabling symptoms]

1.	Problems with your muscles or joints, such as pain, aching, cramping, stiffness or weakness?	MS 0 1 2 3 4 5 6 7 8 9 10
2.	Problems with burning or irritation of your eyes, or problems with your airway or breathing, such as feeling short of breath, coughing, or having a lot of mucus, post-nasal drainage, or respiratory infections?	AIR/MM 0 1 2 3 4 5 6 7 8 9 10
3.	Problems with your heart or chest, such as a fast or irregular heart rate, skipped beats, your heart pounding, or chest discomfort?	COR 0 1 2 3 4 5 6 7 8 9 10
4.	Problems with your stomach or digestive tract, such as abdominal pain or cramping, abdominal swelling or bloating, nausea, diarrhea, or constipation?	GI 0 1 2 3 4 5 6 7 8 9 10
5.	Problems with your ability to think, such as difficulty concentrating or remembering things, feeling spacey, or having trouble making decisions?	COG 0 1 2 3 4 5 6 7 8 9 10
6.	Problems with your mood, such as feeling tense or nervous, irritable, depressed, having spells of crying or rage, or loss of motivation to do things that used to interest you?	AFF 0 1 2 3 4 5 6 7 8 9 10
7.	Problems with balance or coordination, with numbness or tingling in your extremities, or with focusing your eyes?	NM 0 1 2 3 4 5 6 7 8 9 10
8.	Problems with your head, such as headaches or a feeling of pressure or fullness in your face or head?	HEAD 0 1 2 3 4 5 6 7 8 9 10
9.	Problems with your skin, such as a rash, hives or dry skin?	SKIN 0 1 2 3 4 5 6 7 8 9 10
10.	Problems with your urinary tract or genitals, such as pelvic pain or frequent or urgent urination? (For women: or discomfort or other problems with your menstrual period?)	GU 0 1 2 3 4 5 6 7 8 9 10

Total Symptom Score (0-100):

— Masking Index —

The following items refer to *ongoing* exposures you may be having. Circle “0” if the answer is “NO,” or if you don’t know whether you have the exposure. Circle “1” if the answer is “YES,” you do have the exposure. Do not leave any items blank.

Circle “0” or “1” only:

1.	Do you smoke or dip tobacco once a week or more often?	NO=0	YES=1
2.	Do you drink any alcoholic beverages, beer, or wine once a week or more often?	NO=0	YES=1
3.	Do you consume any caffeinated beverages once a week or more often?	NO=0	YES=1
4.	Do you routinely (once a week or more) use perfume, hairspray, or other scented personal care products?	NO=0	YES=1
5.	Has either your home or your workplace been sprayed for insects or fumigated in the past year?	NO=0	YES=1
6.	In your current job or hobby, are you routinely (once a week or more) exposed to any chemicals, smoke or fumes?	NO=0	YES=1
7.	Other than yourself, does anyone routinely smoke inside your home?	NO=0	YES=1
8.	Is either a gas or propane stove used for cooking in your home?	NO=0	YES=1
9.	Is a scented fabric softener (liquid or dryer sheet) routinely used in laundering your clothes or bedding?	NO=0	YES=1
10.	Do you routinely (once a week or more) take any of the following: steroid pills, such as prednisone; pain medications requiring a prescription; medications for depression, anxiety, or mood disorders; medications for sleep; or recreational or street drugs?	NO=0	YES=1

Masking Index (0-10):
(Total number of YES answers)

— Impact of Sensitivities —

If you are sensitive to certain chemicals or foods, on a scale of 0-10 rate the degree to which your sensitivities have affected various aspects of your life. If you are not sensitive or if your sensitivities do not affect these aspects of your life, answer “0.” Do not leave any items blank.

How much have your sensitivities affected:
[0 = not at all] [5 = moderately] [10 = severely]

1.	Your diet?	0 1 2 3 4 5 6 7 8 9 10
2.	Your ability to work or go to school?	0 1 2 3 4 5 6 7 8 9 10
3.	How you furnish your home?	0 1 2 3 4 5 6 7 8 9 10
4.	Your choice of clothing?	0 1 2 3 4 5 6 7 8 9 10
5.	Your ability to travel to other cities or drive a car?	0 1 2 3 4 5 6 7 8 9 10
6.	Your choice of personal care products, such as deodorants or makeup?	0 1 2 3 4 5 6 7 8 9 10
7.	Your ability to be around others and enjoy social activities, for example, going to meetings, church, restaurants, etc.?	0 1 2 3 4 5 6 7 8 9 10
8.	Your choice of hobbies or recreation?	0 1 2 3 4 5 6 7 8 9 10
9.	Your relationship with your spouse or family?	0 1 2 3 4 5 6 7 8 9 10
10.	Your ability to clean your home, iron, mow the lawn, or perform other routine chores?	0 1 2 3 4 5 6 7 8 9 10

Total Life Impact Score (0-100):

For copies of the QEESI, call 210-567-7407 or email millercs@uthscsa.edu.

REFERENCES:

Background information:

Chemical Exposures: Low Levels and High Stakes (2nd Ed.) by Nicholas A. Ashford and Claudia S. Miller, John Wiley & Sons, Inc., New York, 1998.

Sensitivity, specificity, reliability and validity of the QEESI:

Miller CS, Prihoda TJ: The Environmental Exposure and Sensitivity Inventory (EESI): a standardized approach for measuring chemical intolerances for research and clinical applications. *Toxicology and Industrial Health* 15:370-385, 1999.

Miller CS, Prihoda TJ: A controlled comparison of symptoms and chemical intolerances reported by Gulf War veterans, implant recipients and persons with multiple chemical sensitivity. *Toxicology and Industrial Health* 15:386-397, 1999.

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— Interpreting the QEESI[®] —

In a study of 421 individuals, including four exposure groups and a control group, the QEESI[®] provided sensitivity of 92% and specificity of 95% in differentiating between persons with multiple chemical intolerances (MCI) and the general population (Miller and Prihoda 1999a,b).

Cronbach's alpha reliability coefficients for the QEESI[®]'s four scales—Symptom Severity, Chemical Intolerances, Other Intolerances and Life Impact—were high (0.76-0.97) for each of the groups, as well as over all subjects, indicating that the questions on the QEESI[®] form scales showing good internal consistency. Pearson correlations for each of the four scales with validity items of interest, i.e., life quality, health status, energy level, body pain, ability to work and employment status, were all significant and in the expected direction, thus supporting good construct validity.

Information on the development of this instrument, its interpretation, and results for several populations have been published (Miller and Prihoda 1999a,b). Proposed ranges for the QEESI[®]'s scales and guidelines for their interpretation appear in Tables 1 and 2 below:

Table 1. Criteria for low, medium, and high scale scores

Scale/Index	Score		
	Low	Medium	High
Symptom Severity	0-19	20-39	40-100
Chemical Intolerance	0-19	20-39	40-100
Other Intolerance	0-11	12-24	25-100
Life Impact	0-11	12-23	24-100
Masking Index	0-3	4-5	6-10

Table 2. Distribution of subjects by group using “high” cutoff points for symptom severity (≥ 40) and chemical intolerances (≥ 40), with masking low or not low (< 4 or ≥ 4)

Degree to Which MCI is Suggested ²	Risk Criteria ¹			Percentage of Each Group Meeting Risk Criteria				
	Symptom Severity Score	Chemical Intolerance Score	Masking Score	Controls n=76	MCS – No Event n=90	MCS – Event n=96	Implant n=87	Gulf War Veterans n=72
Very suggestive	≥ 40	≥ 40	≥ 4	7	16	23	39	45
Very suggestive	≥ 40	≥ 40	< 4	0	65	66	36	4
Somewhat suggestive	≥ 40	< 40	≥ 4	3	1	2	16	26
Not suggestive	≥ 40	< 40	< 4	0	0	2	3	6
Problematic	< 40	≥ 40	≥ 4	7	3	1	1	0
Problematic	< 40	≥ 40	< 4	3	13	4	2	0
Not suggestive	< 40	< 40	≥ 4	68	1	0	2	18
Not Suggestive	< 40	< 40	< 4	12	1	2	1	1
				100	100	100	100	100

¹ Subjects must meet all three criteria, i.e., Symptom Severity, Chemical Intolerance, and Masking scores, as indicated in each row of this table.

² “Very suggestive” = high symptom and chemical intolerance scores.

“Somewhat suggestive” = high symptom score but possibly masked chemical intolerance.

“Not suggestive” = either (1) high symptom score but low chemical intolerance score with low masking, or (2) low symptom and chemical intolerance scores.

“Problematic” = low symptom score but high chemical intolerance score. Persons in this category with low masking (<4) may be sensitive individuals who have been avoiding chemical exposures for an extended period (months or years).

References:

Miller CS, Prihoda TJ: The Environmental Exposure and Sensitivity Inventory (EESI): a standardized approach for measuring chemical intolerances for research and clinical applications. *Toxicology and Industrial Health* 15:370-385, 1999a.

Miller CS, Prihoda TJ: A controlled comparison of symptoms and chemical intolerances reported by Gulf War veterans, implant recipients and persons with multiple chemical sensitivity. *Toxicology and Industrial Health* 15:386-397, 1999b.