Oxidative Stress Index (OSI) Condensed Questionnaire

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Abstract—The Oxidative Stress Index (OSI) has been shown to predict the onset of non-communicative disease. A condensed form of the OSI questionnaire has now been developed to enable meaningful OSI data to be obtained from answers to only eight questions, rather than from the 400+ items contained in the original detailed questionnaire.

Index Terms—Disease onset mechanism; Environmental disease cause; Oxidative stress and disease; Predicting disease onset.

I. INTRODUCTION

Elevated oxidative stress (OS) is well known to be a direct cause of disease [Kelly, 2003; Zeliger 2016; Riggs, et al., 2020] and the oxidative stress index (OSI) has been shown to be an indicator of the likelihood of non-communicable disease onset [Zeliger, 2017]. The OSI can also be used in multiple other applications, including predicting disease causing parameters for Alzheimer's disease and other diseases [Zeliger, 2019], as a public health survey instrument [Zeliger, 2019a], predicting adverse drug reactions [Zeliger, 2019a] and as a health prescreening tool and for health screening in areas with limited medical facilities and personnel [Zeliger, 2017].

The detailed OSI is based upon responses to a detailed questionnaire that address all contributory items to a person's OS level. In addition to being a valuable predictor of disease onset likelihood, it is also an indicator of lifestyle changes that can be made to lower OS and thereby help prevent disease. The OSI addresses genetics, age, weight, illnesses, conditions that are exacerbated by increased OS, medical symptoms, clinical laboratory results, prescription medications regularly taken, lifestyle and emotional stress.

The length of the detailed OSI questionnaire (containing more than 400 items), however, does not readily lend itself to regular use in clinical settings. Presented here and shown in table 1 is a condensed form of the OSI questionnaire, containing only eight parts, which can be readily used as a screening device to indicate the OSI level. Analysis has shown that OSI values obtained from the condensed OSI form produce scores that are nearly identical to those obtained from the original detailed OSI form. Accordingly, the condensed form can serve as a preliminary screening device to flag potential problems. Those with elevated OSIs in the condensed form can then use the detailed form to help identify specific causes of elevated OS. This can lead to clinically relevant follow up and preventive measures. The modified, currently used, detailed OSI form is shown in Table 2.

The eight items in the condensed form are; age, personal information, prevalent diseases, medications taken, genetics, education level, place of residence and psychological stress. As discussed below, these include all major sources of OS elevation and produce OSI values that are within 90 percent of those obtained using the detailed OSI questionnaire.

II. METHODS

The OSI condensed form is based upon health impacts of the various parameters as reported in the literature. The scoring assignments for the individual parameters in the condensed form are based upon experience with the detailed OSI form. The point values assigned to each parameter are based upon those obtained via the detailed OSI questionnaire.

III. RESULTS AND DISCUSSION

A. Age

Aging is accompanied by an increase in OS, generally starting around age 40 and continuing throughout life [Epel, et al., 2004; Hou, et al., 2015]. Accordingly, one OSI point is scored for each decade. For one aged 40-49, one OSI point is added to his or her total, 2 points are added for those aged 50-59, etc. [Zeliger, 2017].

B. Personal

Being overweight is associated with elevated OS and the onset of numerous diseases. Excessive weight is a worldwide health issue that continues to grow. In the United States, more than 70 percent of adults are overweight, more than half of whom are obese [CDC, 2018]. Diseases associated with excess weight include, but are not limited to; hypertension, dyslipidemia, type 2 diabetes, coronary heart disease, stroke, gallbladder disease, osteoarthritis, sleep apnea, breathing difficulties, anxiety, depression and several cancers (endometrial, breast, colon, kidney, liver and gallbladder [CDC, 2015]. Gender, height and weight information enables one to determine if the person is of normal weight, is heavy, or obese. The original detailed OSI addresses weight impact by number of pounds a person is overweight [Zeliger, 2017]. The condensed OSI categorizes weight into three categories; normal, overweight and obese. Normal weight is assigned a value of zero. Heavy individuals are assigned a score of 1 and obese people are assigned a score of 2.

C. Chronic Prevalent Diseases

The number of prevalent diseases at the time of OSI measurement is a critical indicator of OS. It is well established that disease increases total OS and hence the OSI [Zeliger, 2016; Zeliger 2017]. All diseases have

symptoms associated with them. These are individually addressed in the detailed OSI. The OSI condensed form does not probe individual symptoms. Rather, it has been found that assigning five points for each prevalent disease adequately incorporates elevations in OS associated with the prevalent diseases. Respondents are asked to list all diseases they currently have been diagnosed with. Multiplying the number of prevalent diseases by five yields the disease number in the condensed OSI.

D. Medications

Essentially all pharmaceutical medications raise OS [Zeliger, 2017] and all have adverse drug reactions associated with them [Zeliger, 2019b]. The detailed OSI form addresses these individually. In the condensed form, one OSI point is assigned for each medication taken.

E. Genetics

Genetics is well known to be a factor in most non-communicable diseases [Dato, et al., 2013; Jiang, et al., 2013; Guillaumet-Adkins, et al., 2017]. Indeed, many diseases such including Alzheimer's disease, Parkinson's disease and cancers, just to name a few, "run in families." Recently, epigenetics, as well, has been shown to lead to heritable diseases [Cencioni, et al., 2013; Guillaumet-Adkins, et al., 2017]. Though all non-communicable diseases are more prevalent in those whose ancestors have suffered from those diseases, parental disease is most closely associated with the likelihood of disease onset in an individual [Awdeh, et al., 2006]. Both genetic traits and epigenetic effects raise OS [Cencioni, et al., 2013; Dato, et al., 2013; Jiang, et al., 2013; Guillaumet-Adkins, et al., 2017]. In the condensed OSI form, respondents are asked to check which of their prevalent diseases were also prevalent in their parents and each genetic link is assigned a value of one OSI point.

F. Education

Socioeconomic status (SES) is well established as an indicator of detrimental lifestyle choices that raise OS [Mielck, et al., 2014]. These lifestyle choices include diets high in fats, sugar, salt or processed foods, tobacco, alcohol and recreational drug abuse, radiation exposure and the need to reside or work in a toxic environment [Zeliger, 2016]. SES is also associated with an increased likelihood of having undiagnosed diseases [Bein, et al., 2012; Mielck, et al., 2014; Shaw, et al., 2016].

The detailed OSI lists numerous items that address these points. In the condensed form, all of these are factored into SES as indicated by highest educational level achieved. Educational achievement has been shown to be a valid indicator of SES, with lower SES individuals more likely more likely to lead unhealthy, OS raising life styles and to have undiagnosed diseases [Yin, et al., 2017]. In the condensed OSI form, 5 education levels are identified: some high school, high school graduate, some college, college graduate and graduate degree. These are assigned 5,4,3,2 and 1 OSI point respectively.

SES can also be obtained from annual income information, but asking income information can be considered being nosy and discourage some people from completing the questionnaire. Hence, income is not used in

the condensed OSI questionnaire.

G. Residence

In the 21st century, 90 percent of the world's people, regardless of SES, are exposed to air pollution, as air quality is the same on both sides of the tracks [Combes and Franchineau, 2019; World Health Organization, 2018]. All air pollutants are toxic, raise OS in a dose response relationship, impact the OSI, and are responsible for the onset of numerous diseases including respiratory diseases, cardiovascular diseases, several cancers and Alzheimer's disease [Combes and Franchineau, 2019; Zhou, et al., 2019; Xia, et al., 2019; Kilian J and Kitazawa M, 2018].

Recently, a method to quantify air pollution impact on disease onset, termed the Air Quality Toxicity Index (AQTI) has been reported [Zeliger, 2020]. This method, based upon the dose response relationship between toxic exposure and OS elevation [Zeliger, 2016 and the numerous references contained therein], enables the classification of air quality for individual locations to be calculated and reported as cumulative annual values.

In America, the United States Environmental Protection Agency (EPA) measures air quality in multiple locations on a daily basis and reports the data on-line daily as the Air Quality Index (AQI) [EPA, 2019]. Worldwide, the World Air Quality Project similarly reports air quality data for hundreds of cities. [World Air Quality Index Project, 2019]. On an annual basis, these indices identify the number of days in which the air quality in a given locale is classified as either good, moderate, unhealthy for sensitive groups, unhealthy, very unhealthy or hazardous. Hazard numbers ranging from 1 – 6 have been assigned to the six air quality classifications, as follows [Zeliger, 2020].

<u>Air Quality Classification</u>	<u>Hazard Number</u>
Good	1
Moderate	2
Unhealthy for Sensitive Groups	3
Unhealthy	4
Very Unhealthy	5
Hazardous	6

The air pollution impact on OSI is obtained by multiplying the number of days per year for each of the six EPA classifications at the residence of the responder by the hazard number for that classification and adding the these up to yield the AQTI total as shown in table 3. Also shown in table 3. are the OSI air pollution severities (OSI – AP). These are assigned number values from 0-5, and entered into the OSI condensed form. It should also be noted that EPA publishes daily and annual air quality data for cities and counties in all U.S. states [EPA, 2019].

H. Chronic Psychological Stress

Psychological stress, anxiety and depression are associated with most diseases and are more pronounced as illnesses progress [Sahle, et al., 2020]. Psychological stress, anxiety and depression raise OS via the release of hormones that elevate OS. Chronic activation of this stress response system results in disease and triggers numerous health problems [Mayo Clinic, 2019], including:

Anxiety

Depression
Memory and concentration issues
Digestive problems
Headaches
Heart disease
Sleep problems
Weight gain

Respondents are asked to check if they often feel stressed, anxious or depressed. One point is assigned for each positive response.

The relevance of the OSI to predicting disease onset probability as well as for other applications uses has been previously established [Zeliger, 2017, 2019, 2019a, 2019b, 2019c]. When the OSI condensed form values are used as presented here an excellent correlation between standard form and condensed form OSI values obtains, with condensed form values showing less than a 10% variation from standard form values.

To sum up, the point values assigned to each of the parameters contained in the OSI condensed questionnaire are as follows:

Age	1 for each decade of age starting at age 40.
Personal	0,1, or 2, depending upon weight status
Diseases	5 per prevalent disease
Medications	1 per prescribed or over-the-counter medication regularly taken
Genetics	1 per each item checked
Education	5,4,3,2 or 1, depending upon highest education level achieved
Residence	0,1,2,3,4, or 5, depending upon air pollution level at residence
Stress	0,1,2 or 3, depending upon chronic psychological status

The OSI score has been shown to be related to the likelihood of further disease onset as follows [Zeliger, 2017]:

OSI Level	Disease Likelihood
0-15	Indicative of good health
16-30	Disease onset predicted
31-45	Disease onset probable
46 or higher	Disease imminent

Though the OSI can predict the likelihood of disease onset, it cannot predict which disease(s) are likely to strike.

The condensed OSI form has multiple uses, including the following:

- Part of routine medical examinations to alert clinicians to potential illnesses in seemingly healthy people.
- Use as a screening aid in areas with limited medical personnel and facilities.
- Serving to identify lifestyle changes that will lower OS and likelihood of disease onset.
- Taking of public health surveys to identify disease clusters arising from exposures to chronic exposures to toxic chemicals.
- Making community medical need projections including estimating clinical staffing and resource needs.

- Serving as an indicator of the need to have a person fill out the detailed OSI form which can alert clinicians to specific potential problems.
- Researching sequences of disease onset in those with multiple diseases.
- Predicting numbers of people likely to ail with non-communicative diseases in different geographic areas.

The detailed OSI questionnaire has been modified since it was first introduced. The form currently in use to build a data base has the condensed form questions embedded in it, thus facilitating a comparison of the two forms.

The OSI condensed form does have limitations. It does not probe as yet undiagnosed diseases, conditions and symptoms that are addressed in the detailed form. Also, to date the number of OSI questionnaire responders evaluated is not yet large enough to yield statistically significant data. Work in this area is ongoing, with the understanding that the point values of the condensed form OSI can be adjusted, if necessary, and that additional parameters could be added to the eight reported here, if indicated. Despite the limitations just noted, preliminary results indicate that the condensed OSI form produces values that are 90 percent or more in agreement with that from the detailed OSI form.

IV. CONCLUSIONS

The premise of this paper is that a questionnaire consisting of eight parameters can be used to determine the OSI and that these are representative of all sources of oxidative stress elevation.

The eight parameters used to calculate the condensed form OSI all raise OS levels in dose response relationships [Zeliger, 2016]. These have all been shown to be additive in predicting disease onset likelihood, demonstrating that multiple causes of the same disease are probable, and that no single cause need be the sole one [Zeliger, 2019].

The condensed form of the OSI is a simplified version of the detailed OSI and that like the detailed OSI, can be used to predict the likelihood of disease onset.

V. REFERENCES

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Table 1. OSI condensed questionnaire.

Date _____	No. _____
1. Age: _____	
2. Personal:	female _____ male _____
	height _____ weight _____
	Do you work with toxic chemicals or live near a toxic landfill
	Yes _____ No _____
3. Diseases:	All diseases and diagnosed conditions you now have. _____
	For cancer, add the stage (1,2,3 or 4) if known
	1. _____ 2. _____ 3. _____
	4. _____ 5. _____ 6. _____
	7. _____ 8. _____ 9. _____
	Which of these diseases were diagnosed in the last year

4. Medications:	Number of medications regularly taken _____
5. Family history:	Number of the above diseases parents had/have _____
	Mother _____ Father _____
6. Education:	Check highest level achieved _____
	_____ some high school _____ high school graduate
	_____ some college _____ college graduate

_____ graduate school

7. Residence: City State and County where you live. _____
 City _____ State _____ County _____

8. Stress: Check any that apply _____
 Do you often feel: Stressed _____
 Anxious _____
 Depressed _____

Total _____

Table 2. Detailed OSI questionnaire.

OXIDATIVE STRESS INDEX (OSI) QUESTIONNAIRE

DATE _____ NUMBER _____

GENDER Female _____ Male _____

AGE _____

EDUCATION Check highest level achieved
 _____ some high school _____ high school graduate
 _____ some college _____ college graduate
 _____ graduate school

RESIDENCE City _____ State _____ County _____

FAMILY HISTORY

Put one check for each parent, sibling (sister or brother) or grandparent who has or had each of the diseases or conditions identified.

- _____ Parent with neurological disease - Alzheimer's, Parkinson's, Lou Gehrig, ADHD or Autism
- _____ Parent with diabetes
- _____ Parent with heart disease, heart attack or stroke
- _____ Parent with asthma or COPD
- _____ Parent with allergies - hay fever, animals, food or chemicals
- _____ Parent with cancer
- _____ Siblings with neurological disease - Alzheimer's, Parkinson's or Lou Gehrig, ADHD or Autism
- _____ Siblings with diabetes
- _____ Siblings with heart disease, heart attack or stroke
- _____ Siblings with asthma or COPD
- _____ Siblings with allergies - hay fever, animals, food or chemicals
- _____ Siblings with cancer
- _____ Grandparents with neurological disease - Alzheimer's, Parkinson's or Lou Gehrig,

- _____ ADHD or Autism
- _____ Grandparents with diabetes
- _____ Grandparents with heart disease, heart attack or stroke
- _____ Grandparents with asthma or COPD
- _____ Grandparent with allergies - hay fever, animals, food or chemicals
- _____ Grandparent with cancer

Total Family History Checks _____

AGE

Check all age boxes that apply. If, for example, you are 55 years old check the first two boxes. If you're 82, check all 5 of these boxes

- _____ 40 or older
- _____ 50 or older
- _____ 60 or older
- _____ 70 or older
- _____ 80 or older

WEIGHT

Find your healthy weight, on the weight chart (see table 2.2 on page 46). Check all the weight boxes that apply. If, for example you are 40 pounds over your recommended weight, check the first three boxes and add three checks to the total. Find your recommended weight on the weight chart at the end of the OSI checklist.

- _____ 10 - 20 pounds overweight
- _____ 21 - 40 pounds overweight
- _____ 31 - 60 pounds overweight
- _____ 61 - 80 pounds overweight
- _____ 81 or more pounds overweight

Total age and weight checks _____

ILLNESSES and CONDITIONS

Check all illnesses or conditions that you have been diagnosed with and currently have.

- _____ Acne
- _____ ADHD (Attention Deficit Hyperactivity Disorder)
- _____ AIDS or HIV
- _____ Alcohol addiction
- _____ Allergic rhinitis (sinus inflammation)
- _____ ALS (Lou Gehrig's disease)
- _____ Anemia
- _____ Anorexia
- _____ Anxiety disorder
- _____ Arthritis
- _____ Asthma
- _____ Autism and ASD
- _____ Autism or autism spectrum disorder (ASD)
- _____ Benign prostate hyperplasia (enlargement - BPH)
- _____ Bipolar disorder
- _____ Bronchitis (chronic)
- _____ Bulimia
- _____ Bulging or herniated disc
- _____ Carpal tunnel syndrome

☐	Cancer - Check all that apply. If stage three, for example, check first three
☐	Cancer - stage 1
☐	Cancer - stage 1 or 2
☐	Cancer - stage 1, 2 or 3
☐	Cancer - stage 1, 2, 3 or 4
☐	Frequent infection
☐	Frequent sinus infections (sinusitis)
☐	Glaucoma
☐	Gout
☐	Gum disease
☐	Heart attack
☐	Heart Disease or heart problems
☐	Hemorrhoids
☐	Hepatitis B (chronic)
☐	High blood pressure (hypertension)
☐	High cholesterol
☐	Herpes
☐	Inflammatory bowel disease
☐	Irritable bowel syndrome (IBS)
☐	Kidney disease
☐	Leukemia
☐	Liver cirrhosis
☐	Liver disease
☐	Lupus
☐	Lyme disease
☐	Macular degeneration
☐	Malaria
☐	Metabolic syndrome (pre-diabetes)
☐	Middle ear infection (frequent)
☐	Migraine headaches
☐	Multiple chemical sensitivity (MCS)
☐	Multiple sclerosis
☐	Obesity
☐	Osteoarthritis
☐	Osteoporosis
☐	Parkinson's disease
☐	Periodontal disease (swollen or bleeding gums)
☐	Post-traumatic stress disorder (PTSD)
☐	Rocky Mountain spotted fever
☐	Psoriasis
☐	Rosacea
☐	Schizophrenia
☐	Sexually transmitted disease (STD)
☐	Shingles
☐	Sjogren's syndrome
☐	Sleep apnea
☐	Stroke
☐	TB (Tuberculosis)
☐	Thyroid disease
☐	Tourette syndrome
☐	Tremors
☐	Ulcers
☐	Varicose veins
☐	West Nile Fever
☐	Yellow fever
☐	Zika
☐	Write in the names of any other illnesses you have that were not listed above and check those.
☐	_____
☐	_____

Total Disease Checks _____

DISEASE START

How many of the diseases checked above started in

- _____ The past 2 years?
_____ The past 5 years?
_____ The past 10 years?

SYMPTOMS

Check all the symptoms that you currently experience.

- _____ Abdominal pain (frequent)
_____ Allergic reactions to chemicals
_____ Allergic reactions to any foods
_____ Allergic reactions to insects
_____ Allergic reactions to medications
_____ Allergic reactions to plants (Hay fever)
_____ Ankle pain
_____ Attention span decline
_____ Anxiety often
_____ Appetite loss
_____ Bleeding gums
_____ Blood in stool
_____ Blood in urine
_____ Blurred or cloudy vision
_____ Bruise easily
_____ Burning when urinating
_____ Butterflies in your stomach often
_____ Change in skin color
_____ Chest pain
_____ Constant chills
_____ Constipation
_____ Cough that is persistent
_____ Coughing or spitting up blood
_____ Decision making difficulties
_____ Decline in learning ability
_____ Decreased eye sight
_____ Decreased sex drive
_____ Diarrhea (frequent)
_____ Difficulty completing familiar tasks
_____ Difficulty concentrating
_____ Difficulty getting warm
_____ Difficulty maintaining balance
_____ Difficulty solving problems
_____ Difficulty swallowing
_____ Difficulty walking
_____ Difficulty concentrating or finding words
_____ Dizziness
_____ Drained of energy
_____ Dreams that are bizarre and recurring
_____ Excessive mucous production
_____ Excessive thirst
_____ Eye discomfort or pain
_____ Eye redness
_____ Fatigue
_____ Feel depressed a lot
_____ Feel less alert or fuzzy headed

____ Fever
____ Food allergies
____ Foot pain
____ Foot swelling
____ Fungal infection such as athlete's foot that persists
____ Frequent anxiety
____ Frequent depression
____ Frequent stress
____ Frequent headaches
____ Frequent indigestion
____ Frequent itching
____ Frequent rashes
____ Frequent urination
____ Graying of hair
____ Hair loss (not due to chemotherapy)
____ Have itchy scaly skin rashes
____ Headaches frequently
____ Hear voices inside you
____ Hearing loss that comes on suddenly
____ Heart palpitations (throbbing)
____ Heartburn
____ Hip pain
____ Hoarseness
____ Increased susceptibility to infections
____ Indigestion (frequent)
____ Insomnia
____ Irregular periods
____ Itchy hands
____ Itchy skin other than hands
____ Jaw pain
____ Leg swelling
____ Learning new things more difficult
____ Light headedness
____ Long recovery time from infections
____ Losing track of time
____ Loss of coordination
____ Loss of muscle tone
____ Loss of taste
____ Lower back pain
____ Memory loss
____ Mood swings from very high to very low and vice versa
____ Mouth sores that don't go away quickly
____ Muscle aches that last a long time
____ Muscle cramps
____ Muscle spasms
____ Nasal congestion
____ Nausea
____ Neck pain
____ Nervousness
____ Nightmares regularly
____ Nose bleeds
____ Knee pain
____ Numbness or tingling in hands or feet
____ Pain in joints
____ Heart palpitations
____ Pelvic pain
____ Perspire (sweat) profusely
____ Post nasal drip that lingers
____ Post traumatic stress disorder (PTSD)
____ Problems finding the words you want

- _____ Rapid hair loss
- _____ Rapid heartbeat
- _____ Scaly skin
- _____ Seizures
- _____ Shortness of breath
- _____ Shoulder pain that lingers
- _____ Sinus pain
- _____ Skin mole growth
- _____ Skin rashes
- _____ Sleep less than 7 hours per night
- _____ Sleep more than 9 hours a night
- _____ Slow to heal from cuts, bruises or other injuries
- _____ Slurred speech
- _____ Smaller field of vision
- _____ Sore throat that doesn't heal
- _____ Stressed out most or all of the time
- _____ Stuffy nose
- _____ Swollen eye lids
- _____ Tics (involuntary movements)
- _____ Tingling in the hands or feet
- _____ Tire easily
- _____ Tired most of the time
- _____ Tooth pain
- _____ Tremors
- _____ Twitching
- _____ Unusual vaginal bleeding or discharge
- _____ Urination difficulty
- _____ Urination pain
- _____ Varicose veins
- _____ Vomiting
- _____ Wake up more than 3 times per night
- _____ Weakness
- _____ Weight gain
- _____ Weight loss (rapid)
- _____ Wheezing
- _____ Wrinkling or loss of tone in skin
- _____ Yawning frequently

Total Symptoms Checks _____

TEST RESULTS

The following address results obtained from test doctors ordered done as part of annual examinations. Check all that apply to you.

- _____ High or low blood sugar
- _____ High or low BUN (blood urea nitrogen)
- _____ High or low calcium
- _____ High or low carbon dioxide (bicarbonate)
- _____ High or low chloride
- _____ High cholesterol
- _____ High or low creatinine
- _____ High glucose
- _____ High or low potassium
- _____ High PSA
- _____ High or low sodium
- _____ High triglycerides
- _____ Low blood oxygen
- _____ Low potassium

Total Test Results Checks ____

PRESCRIPTION MEDICINES REGULARLY TAKEN

Check each of the boxes that apply. If you regularly take five prescription drugs, for example, check **all** of the first 5 items, so that the total number of items checked equals the total number of prescriptions regularly taken.

- ____ 1 prescription
- ____ 2 prescriptions
- ____ 3 prescriptions
- ____ 4 prescriptions
- ____ 5 prescriptions
- ____ 6 prescriptions
- ____ 7 prescriptions
- ____ 8 prescriptions
- ____ 9 prescriptions
- ____ 10 or more prescriptions
- ____ Have a heart pacemaker

Total Prescription Medicine Checks ____

DIET

Check each item that applies to the foods that are part of your **regular** eat.

- ____ Alcoholic beverages (beer, wine, spirits) more than 1 drink per day
- ____ Artificial sweeteners for coffee or tea
- ____ Canned or frozen cooked foods regularly eaten (soups, pastas, meats)
- ____ Bread and pasta made primarily from white processed flour
- ____ Fast food frequently eaten
- ____ Fewer than 3 fruits or vegetables a day
- ____ Grilled, smoked or blackened meat, chicken or fish
- ____ Food high in fat (whole milk, cheeses, foods cooked with butter and animal fat)
- ____ Often eat processed foods (bacon, hot dogs, salami, sausages, deli meats)
- ____ Eat red meat more than 2 times a week
- ____ Eat foods high in sugar (sweetened drinks and desserts)
- ____ Salty food

Total Diet Checks ____

LIFE STYLE

These items refer to where you live, the type of work you do and chemicals you may be exposed to.

- ____ Are a farmer that regularly uses pesticides
- ____ Burn wood for heat or for cooking
- ____ Constantly use a cell phone
- ____ Drink chlorinated water
- ____ Drink more than one alcoholic drink per day
- ____ Take steroids for muscle enhancement
- ____ Exercise less than one half hour a week
- ____ Have mold in your home
- ____ Have new (less than 6 months old) carpet in your home
- ____ Have pets in your home that you are allergic to
- ____ Live down wind from a smoking industrial chimney
- ____ Live in a city with air quality alerts
- ____ Live or work close to a cell tower
- ____ Live or work near high voltage electrical transmission lines

☐ Live near a heavily traveled highway or road
☐ Live near a landfill
☐ Live near industrial storage tanks (chemicals, oil or asphalt)
☐ Live with a smoker
☐ Regularly experience allergic reactions in your home
☐ Regularly experience allergic reactions in your work place
☐ Regularly use room or furniture deodorants
☐ Regularly play contact sports
 Tobacco use. Check **all** of the items that apply. For example, if you smoke one pack of cigarettes a day, check both of the first 2 items. If you smoke two packs a day, check all of the first 4 items.

☐ Smoke 10 cigarettes or less daily (even just one)
☐ Smoke a pack a day (20 cigarettes)
☐ Smoke a pack and a half a day (30 cigarettes)
☐ Smoke two packs a day (40 cigarettes)
☐ Smoke more than two packs a day
☐ Smoke 1-5 cigars a day
☐ Smoke 6 or more cigars a day
☐ Use smokeless tobacco
☐ Work as a toll booth collector
☐ Work in very hot or very cold conditions regularly
☐ Work in an adhesives or coatings manufacturing plant
☐ Work in an agricultural chemical manufacturing plant
☐ Work as an automobile, diesel or aircraft mechanic
☐ Work with chemicals on the job regularly
☐ Work in a dusty environment regularly
☐ Work in a landfill
☐ Work in a hair or nail salon
☐ Work in metal refinery or mill
☐ Work as a miner
☐ Work in a noisy environment
☐ Work in a paint, lacquer, stain or varnish manufacturing plant
☐ Work as a painter
☐ Work as a pilot or flight attendant
☐ Work as a pesticide applicator
☐ Work in a petroleum refinery
☐ Work in a plastics manufacturing plant
☐ Work in a plywood or particle board manufacturing plant
☐ Work in a polluted environment (road paver, toll booth operator, for example)
☐ Work in a water or sewage treatment plant
☐ Work in wood treatment plant

Total Lifestyle Checks _____

OSI, Total of All Checks _____

Table 3. Annual air quality classification as shown by AQTI.

AIR QUALITY CLASSIFICATION	AQTI	OSI-AP
Good	365-450	0
Moderate	451-600	1
Unhealthy for Sensitive Groups	601-750	2
Unhealthy	751-900	3
Very Unhealthy	901-1050	4
Hazardous	1051 or higher	5