Program Book

Andalas International Public Health Conference and The 5th National Meeting of The Indonesian Public Health Union (MUNAS V PERSAKMI)

Organized by :
Faculty of Public Health, Andalas University

September 6 - 7, 2017
Padang, Indonesia

Program Book

September 6-7, 2017
Padang, Indonesia

Welcome Message

Dear Andalas International Public Health Conference attendees,

On behalf of Andalas International Public Health organizer, it is my great pleasure to welcome you to the Andalas International Public Health Conference 2017 in Padang, Indonesia. Faculty of Public Health, Andalas University organizes this distinguished event as its contribution to public health development, particularly with regards to SDGs achievement developing countries. This conference will gather many public health actors to contribute together towards human well-being through research, publication, capacity building and advocacy.

Andalas International Public Health Conference (AIPHC) 2017attended by 300 participants from various countries and backgrounds. They will share ideas in public health fields on September 5-7, 2017. At the end of this event, AIPHC attendees are invited to join a trip to enjoy the gorgeous view of West Sumatera Province.

I would like to express my gratitude to the Rector of Andalas University, The Indonesian Public Health Union (Persakmi), colleagues, academics, researchers, students and all participants. Hopefully, this conference will improve the quality of public health strategies in the future.

Sincrely,

Defriman Djafri, SKM., MKM., Ph.D

Dean of Faculty of Pulic Health Andalas University

Contens

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Organizer: Faculty of Public Health, Andalas University

The establishment of the Faculty of Public Health, Andalas University (FKM Unand) originated from the Study Program of Public Health Sciences, Faculty of Medicine, Andalas University (PSIKM FK Unand) which was established in 2000 along with the issuance of the Decree of the Director General of Higher Education No. 400/DIKTI/Kep/2000 in November 30, 2000. The aim is to educate public health in bachelor level who is able to handle public health problems particular in the Central Sumatra and Indonesia in general.

The developments of PSIKM since it was established was accompanied by the high interest of the community, the Faculty of Medicine as the mother of PSIKM intends to prepare the development of PSIKM into new faculty. It was finally realized with the inauguration of Faculty of Public Health Andalas University by Rector Unand at that time, Dr. Werry Darta Taifur, SE. MA, on Friday, July 13, 2012. FKM has 34 lecturers. Most of them are have doctoral education and completing doctoral degree at Indonesia and abroad. Until now, FKM has 2 study programs. They are Public Health Study Program and Nutrition Study Program. The Public Health Study Program of itself is divided into 4 specializations are Epidemiology, Nutrition, Administration and Health Policy (AKK), Reproductive Health (Kespro) and Occupational and Environmental Health (K3 & KL).

Program at Glance

Date	Time	Program				
5 Sept	08.00	Registration				
	09.00	Workshop 1 (Basa I)	Workshop 2 (Basa II)	Workshop 3 (Batuah I)	Workshop 4 (Batuah II)	
	10.00					
	11.00					
	12.00					
	13.00	Lunch break (Restoran Angso Duo)				
	14.00	Workshop 1 (Basa I)	Workshop 2 (Basa II)	Workshop 3 (Batuah I)	Workshop 4 (Batuah II)	
	15.00					
	16.00					
	17.00	GR Conference Opening (Ballroom)	Side-meeting Persakmi (Basa I)			
	19.00					
	20.00					
	21.00					
	19.00	Dinner in Sati II				
6 Sept	07.00	Conference registration, poster drop counter				
	09.00	Safety induction				
	09.05	Opening ceremony from MC				
	09.10	Sing a national song of Indonesia				
	09.15	Art performance				
	09.25	AIPHC Chairman				
	09.35	Dean of Faculty of Public Health				
	09.40	Welcome Speech from Chairman of PERSAKMI				
	09.45	Rector of Andalas University				
	09.55	Opening: The Governor of West Sumatera Povince				
	10.00	Photo session				
	10.15	Pray				
	10.20	Coffee break and Poster Display (Sati III Room)				
	10.30	Keynote speech:The Governor of West Sumatera Povince				
	11.00	**Panel Discussion 1** (Sati Ballroom) **Linking Health Promotion and Disease Prevention to SDGs**				

		1. Dr. M. Subuh The Challenges on Achieving SDGs in Indonesia: from Public Health Perspective **2. Prof. Hari Kusnanto** The Target of Health Development Agenda of SDGs: Where are we now? **3. Hanifa Maher Deny, SKM, MPH, PhD** The Need of Public Health Professionalism in Accelerating SDGs Achievement **4. Defriman Djafri, SKM, MKM, PhD** Developing an Evidence-Based Public Health Policy: Another Core Competency of Public Health Professional for SDGs Achievement				
	13.00	Lunch break (Angso Duo Restaurant)				
	14.00 14.30 15.30	Scientific Presentation I (Sati I)	Scientific Presentation II (Sati II)	Scientific Presentation III (Basa II)	Scientific Presentation IV (Batuah I)	Scientific Presentation V (Batuah II)
	15.30	Coffee break and Poster Display (Sati III Room)				
	15.45 16.30 17.15	Scientific Presentation VI (Sati I)	Scientific Presentation VII (Sati II)	Scientific Presentation VIII (Basa II)	Scientific Presentation IX (Batuah I)	Scientific Presentation X (Batuah II)
	17.15 18.30	**Side-meeting Persakmi (Basa II & Batuah I)**				
	19.00	Welcome Dinner				
	20.00 23.00	**Side-meeting Persakmi (Basa II & Batuah I)**				
7 Sept	08.30	**Panel Discussion 2** (Sati Ballroom) **Effectiveness and Efficiency of Heath Promotion and Disease Prevention Initiatives in Manging NCDs** **1. dr. Anung Sugihantono, M.Kes** Indonesian Policy in NCDs Prevention and Screening **2. Prof. Syed Aljunid** Cost-effectiveness Intervention on NCDs Prevention: HPV Vaccine, Screening of Colorectal Cancer, and Mammogram **3. Prof. Umesh Kapil** Current Evidence on Vitamin A Supplementation for Reduction of under Five Mortality in Developing Countries Including Indonesia **4. Dr. Mary Assunta** Tobacco Control in ASEAN region: Progress and Challenges				

	10.00	Coffee break and Poster Display (Sati III Room)				
	10.30	**Panel Discussion 3** (Sati Ballroom) **Role of Health Financing Program in Health Promotion and Disease Prevention** **1. Dr. Mundiharno, M.Si** Health Financing Policy on Health Promotion and Disease Prevention in Indonesian NHI **2. Madeleine R. Valera MD, M.ScIH** Role of Health Financing Program in Health Promotion and Disease Prevention in the Philippines NHI **3. Prof. Sukil Kim** Strategies for Effective Health Promotion and Disease Prevention Financing in Korean NHI **4. Ade Suzana E.P, SKM, M.Comm Health, PhD** Challenges on Managing Health Promotion and Disease Prevention Funds in Indonesia				
	12.00	Lunch break (Angso Duo Restaurant)				
	13.30 14.30 15.00	Scientific Presentation XI (Sati I)	Scientific Presentation XII (Sati II)	Scientific Presentation XIII (Basa II)	Scientific Presentation XIV (Batuah I)	Scientific Presentation XV (Batuah II)
	15.00	Coffee break and Poster Display (Sati III Room)				
	15.30	Closing Ceremony from Dean of Public Health Faculty (Sati Ballroom)				
	16.00 23.00	Munas (Basa II & Batuah I)	Dinner Persakmi (Sati II)			

Venues

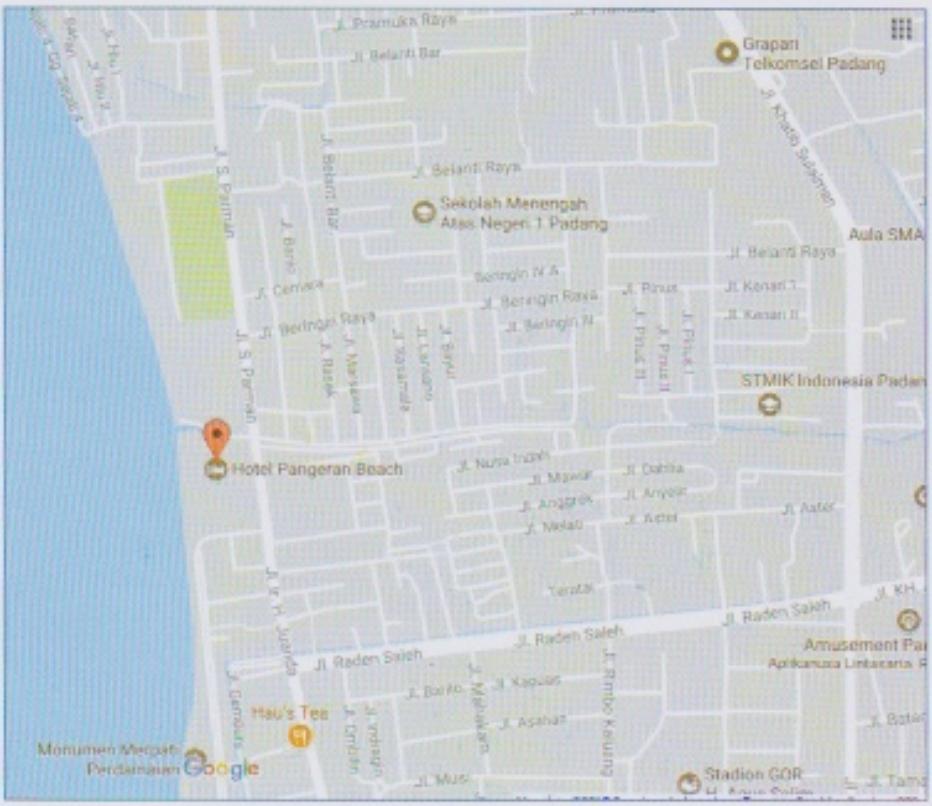
Hotel Pangeran Beach

Jl. Ir. H. Juanda No. 79

Padang 25115

West Sumatera, Indonesia

Hotel Pangeran Beach, a four-star hotel, located right on the magnificent beach side of the Indian Ocean.The hotel is located in the heart of central business and only 30 minutes from Minangkabau International Airport. Hotel Pangeran Beach is designed to provide hospitality and the best place for a conference with capacity up to 1000 participants.



Pangeran Beach Hotel

Panel Discussion

Day2 : September 6, 2017

Time	Agenda	Room
10.45 – 12.15	**Panel Discussion 1** **Linking Health Promotion and Diseases Prevention to SDG's** 1. Dr. M. Subuh The Challenges on Achieving SDGs in Indonesia: from Public Health Perspective 2. Prof. Hari Kusnanto The Target of Health Development Agenda of SDGs: Where are we now? 3. Hanifa Maher Deny, SKM, MPH, PhD The Need of Public Health Professionalism in Accelerating SDGs Achievement 4. Defriman Djafri, SKM, MKM, PhD Developing an Evidence-Based Public Health Policy: Another Core Competency of Public Health Professional for SDGs Achievement	Sati Ballroom

Day3 : September 7, 2017

Time	Agenda	Room
08.00 –10.00	**Panel Discussion 2** **Effectiveness and Efficiency of Health Promotion and Disease Prevention Initiatives in Managing NCDs** 1. dr. Anung Sugihantono, M.Kes Indonesian Policy in NCDs Prevention and Screening 2. Prof. Syed Aljunid Cost-effectiveness Intervention on NCDs Prevention: HPV Vaccine, Screening of Colorectal Cancer, and Mammogram 3. Prof. Umesh Kapil Current Evidence on Vitamin A Supplementation for Reduction of under Five Mortality in Developing Countries Including Indonesia 4. Dr. Mary Assunta Tobacco Control in ASEAN region: Progress and Challenges	Sati Ballroom
10.30 - 12.00	**Panel Discussion 3** **Role of Health Financing Program in Health Promoion and Diseases Prevention** 1. Dr. Mundiharno, M.Si Health Financing Policy on Health Promotion and Disease Prevention in	Sati Ballroom

	Indonesian NHI 2. Madeleine R. Valera MD, M.ScIH Role of Health Financing Program in Health Promotion and Disease Prevention in the Philippines NHI 3. Prof. Sukil Kim Strategies for Effective Health Promotion and Disease Prevention Financing in Korean NHI 4. Ade Suzana E.P, SKM, M.Comm Health, PhD Challenges on Managing Health Promotion and Disease Prevention Funds in Indonesia	

Scientific Presentation III

Track : Enviromental and Occupational Health I

Room : Basa II

Date : 6 September 2017

Time : 13.30 - 15.00

No.	Title	Authors
1.	Evaluation of Subjective Symptoms and The Concentrations of Benzene, Toluene and Xylene Exposure in Shoe Manufacturing Industry	Taufik Ashar, Evi Naria, Devi Nuraini
2.	The Association of Urinary Cadmium, Malondialdehyde in Urine and Parkinsonism Symptoms in Community that Exposed to Cadmium from Drinking Water	Taufik Ashar, Surya Dharma
3.	Health risk of inhaled ammonia (NH3) to urea and ammonia plant workers at PT K.	Ratna Dwi Puji Astuti, Rachmadhi Purwana
4.	Distribution of potential pollutants and well distances In the Code River area of Yogyakarta City	Ahmad Faizal Rangkuti, Musfirah
5.	Effect Of Nitrogen Dioxide (NO2), Premature Birth. And LBW Against Of Recurrence Of Asthma In Children Based On Residential Area	Septia Pristi Rahmah
6.	Determinants of Sustainable Waste Management Intention Behavior on Junior High School Students in Padang, Indonesia	Aria Gusti
7.	Relationship of Noise Intesity, Personal Protective Equipment Use with Hearing Loss on Ground Handling Workers in Kualanamu International Airport	Ramadhani Safrina, Silaban Gerry, Hasan Wirsal
8.	Effect Of Work Stress, Work Fatigue On Secondary Infertility Of Nurses In Inpatient Wards Of RSUD DR Djoelham Binjai 2017	Tarigan Renny Adelia, Silaban Gerry, Siregar Ganis Fidel
9.	Occupational Safety And Health Risk Analysis At Production Division With Hirarc Method In Rubber Company Pt. Bhb Padang City	Mitbasman Mikra, Nizwardi Azkha, Nopriadi
10.	The Quality Of Water Mahakam River Was On Public Health At Loa Duri Village Loa Janan Kutai Kartanegara District	Hansen

Poster Presentations

No.	Title	Authors
1.	Comparison Of Accuration Kinyoun Gabbet Stain To Lugol Stain For Detection Of Soil Transmitted Helminths	Merina Panggabean, Cut Lifia Fitriani, Yoan Carolina Panggabean
2.	A Retrospective Study Of The Asosiated Between Quantity And Variaties Fruit Consumption With Glycemic Status In Patient Type-2 Diabetes Mellitus	Juli Widiyanto, Isnaniar, Trisiwi Kusuma Ningrum
3.	Changing Of Climate With Dengue Hemorrhagic Fever Of Pariaman City	Masrizal, Delvalianggi, Fauziah Elytha
4.	Nutritional Status, Physical Activity And VO2 Max Among Male Student In SMA Sutomo 2 Medan	Irianto, Nenni D Lubis, Sri Amelia
5.	Implementation Of Policy On Health Operational Cost At Health Department Of Palu	Muhammad Ryman Napirah, Muhammad Jusman Rau, Indah Ekmy Siantary Putri
6.	Analysis Of Fullfilment Tools Of Active Fire Protection And Tools Of Saving In The Building Of Public Health Faculty In Andalas University 2017	Ramon Odipatra
7.	Factors That Affect Work Stress Of Garment Workers In South Tangerang Villages	Dini Widianti
8.	E. Coli Infection At A Newborn Celebration : Food Poisoning Outbreak In Teluk, Indonesia	Muhammad Syairaji
9.	The Use Of Chitosan Cuo Composite As Adsorbent To Decrease Metal Cadmium (Cd) In Dug Well At Namo Bintang Village	Yenni Farida Siregar
10.	Relationship Between The Readability In Emergency Form With The Accuracy Of The External Causes Coding Of Injury On Traffic Accident	Nandita Risa
11.	Patient Handling Risk Relationship With Musculoskeletal Complaints On Nurses In Inpatient Unit RSUD DR. RM. Djoelham Binjai	Jhely Febria
12.	Risk Factors Affect The Occurrence Of Salt In Hypertension At Puskesmas Patumbak	Ginting Wira Maria
13.	Relationship Chracteristics, Lifestyle, Social Factors And Nutrition Intake With Nutritional Status On Elderly In Padangmatinggi Community Health Center Of Padangsidimpuan	Johanna Christy
14.	Risk Factors That Affect The Occurrence Of CHD In TNI < 40 Years At TK II Putri Hijau Hospital Medan	Jun Edy Pakpahan
15.	The Risk Factors For Chronic Kidney Disease Incidents In Dr. M. Djamil Hospital Padang 2016	Roma Yuliana
16.	Environmental Health Risk Assessment Of PM10 Exposure To Traders In Siteba Market Area Padang	Aria Gusti
17.	Factors Which Influence The Incidence Of Imminent Abortion In The Regional General Hospital Padangsidimpuan	Layla Fadhilah Rangkuti
18.	Risk Factor Of Stunting Incidence In Girls Aged 2-3 Years In Working Area Primary Health Center Of Biru, Southern Tapanuli	Anni Mardiah Pohan
19.	Embedding Health Action Process Approach (Hapa) In Developing Parenting Program To Enhance Maternal Efficacy Of Care	Leny Latifah

Poster Presentations

PERSAKMI

267/PP-PERSAKMI-SKP/VII/2017/ 4 SKP
122/IAKMIPUSAT/SKP-VI/2017/2SKP

Certificate

is awarded to

Dr. Aria Gusti, SKM, M.Kes

as

POSTER PRESENTER

has attended

Andalas International Public Health Conference 2017
and
The 5th National Meeting of The Indonesian Public Health Union
September 5-7, 2017
Padang, Indonesia

Defriman Djafri, SKM., MKM., Ph.D
Dean, Faculty of Public Health
Andalas University

AIPHC
Andalas International Public Health Conference

Ade Suzana E.P., SKM., M. Comm Health, Sc., Ph.D
Chairman of AIPHC 2017

PERHIMPUNAN SARJANA KESEHATAN MASYARAKAT INDONESIA
Pengurus Pusat
PERSAKMI

Hanifa M. Denny, SKM., MPH., Ph.D
President of Indonesian Public Health Union

Makalah AIPHC

(Poster Presentation)

Environmental Health Risk Assessment Of Pm10 Exposure To Traders In Siteba Market Area Padang

Aria Gusti
Department of Environmental Health and Occupational Health,
Faculty of Public Health, Andalas University,
Padang, West Sumatera, Indonesia

Background: PM10 is a harmful dust that can cause various health problems, especially increased respiratory diseases. This study aims to determine the level of environmental health risk through the analysis of risk of PM10 exposure to traders in Siteba market area and risk management can be done.
Materials and methods: This research uses Environmental Health Risk Assessment (EHRA) method. The study was conducted from November 2016 to March 2017, with 45 respondents. The sampling technique is accidental sampling. Data analysis is univariate and EHRA.
Results : The average concentration of PM in the three sampling sites was 150 μm / Nm3. The reference concentration value (RfC) of PM10 is 0.014 mg / kg / day. The lifetime value of PM10 through inhalation at Kodam Intersection and Perumnas Intersection has a value of RQ>1, indicating that the exposure is not safe for traders so it is necessary to control and based on PM10 exposure of realtime intake through inhalation in the three sampling sites indicates that exposure is safe or not there is a risk to the trader with a RQ value <1.
Conclusions: The results of the lifetime risk show that two sampling sites of Kodam Intersection and Perumnas Intersection have risks with RQ> 1

Keywords *: Risk analysis, exposed, PM10*

INTRODUCTION

The problem of air pollution is a global problem, almost all countries experience it. Air pollution can occur outdoors (outdoor) or indoors (indoor). Outdoor air pollution occurs because of the presence of outdoor air pollutants originating from movable sources, namely the burning of motorized vehicles such as cars, motorcycles, trucks and buses, and originating from immovable sources such as industry, development processes, road activities, and dirt trail above the highway.[1]

According to the World Health Organization (WHO) in 2016, 98% of cities in low and middle income countries with more than 100,000 residents did not meet air quality guidelines based on WHO standards.1 Southeast Asia is the region with the worst air pollution in the world which contributed around 936,300 deaths to 2012. Air pollution in Indonesia has resulted in 60,000 deaths per year.[2]

One of the air pollutants that can cause health problems are coarse dust particles or particulate matter (PM10) which are complex, heterogeneous mixtures of smoke, soot, dust, salt, acids, and metals and vary in concentration, size, chemical composition, area surface and source of origin.3 These air particles in solid form less than 10 μm in diameter, commonly referred to as PM10 and less than 2.5 μm in the house (PM2,5) are believed by environmental experts and public health to trigger channel infections breathing, because solid particles PM10 and PM2,5 can settle in the respiratory tract bronchi and alveoli.[4]

Large particulates can be held in the upper respiratory tract, while small-sized particulates can reach the lungs, after which pollutants are absorbed by the circulatory system and spread

throughout the body. Studies have shown that particle pollution is associated with lung function that is threatened with respiratory problems.[5] The health impacts caused are Acute Respiratory Tract Infections (ARI), including asthma, bronchitis, and other respiratory disorders. Short and chronic exposure to PM10 plays a role in increasing the risk of cardiovascular disease and respiratory diseases including lung cancer.[6,7]

The results of research at street vendors in Semarang and industrial workers in East Jakarta stated that there were health risks due to exposure to PM10. Based on research on street vendors due to transportation activities in the city of Semarang, the results of the risk characterization estimation indicate the level of risk received by street vendors at maximum PM10 concentrations already unsafe for the next 5 years.[8] PM10 exposure health risks for industrial workers in Kebon Nanas, East Jakarta began to exist and need to be controlled for the duration of exposure> 5 years.[9] The results of the research on the risk level of PM10 life time exposure in Beijing found health risks due to exposure to PM10 in densely populated areas higher than the periphery.[10]

The concentration of dust particles depends on location and time.[11] The spatial distribution of particle concentrations in China varies due to spatial differences in the level of the local economy and geographical environment.[12] Estimates of the risk characterization of PM10 in Cilegon, West Java, both in the adult population and in children, indicate that there are several location points which pose a risk of causing public health impacts.[13]

The results of monitoring ambient air quality at several measurement points in Padang City were conducted by the Regional Environmental Impact Management Agency (Bapedalda), namely in front of SMA 1 Padang, Asratek Housing in Ulak Karang Selatan Village, and Unand Gadut Housing in Limau Manis Village with PM10 concentrations not yet passed threshold value or quality standard based on the Republic of Indonesia Government Regulation Number 41 of 1999 concerning Environmental Pollution Control. In this regulation the quality standard PM10 is 150 µg / Nm3. However, for the measurement points in front of the Al-Munawarah Siteba Mosque in 2014 PM10 levels exceeded the threshold value or quality standard with PM10 concentration values of 157.1 µg / Nm3, and PM10 concentrations at the measurement point in front of the Al-Munawarah Siteba Mosque at the most the concentration is higher than the location of other measurement points. Measurements made by the Bapedalda in front of the Al-Munawarah Siteba Mosque to determine PM10 levels in the residential area air.

The Siteba Market area is located on Jalan Raya Siteba, Padang, which is a densely populated area that is passed by private vehicles and public vehicles, such as city transportation, Pasar Raya-Siteba. This vehicle emission produces PM10 dust which can give health problems to the merchant's respiratory tract in the Siteba Market area, given the distance of the road to the shop or merchant cart that is not too far from the highway. The source of PM10 dust in the Siteba Market area also originates from the increase or elevation of dust from the road due to vehicle traffic and land traces on the highway, and no less important is the cleanliness of the market itself.

Risk is defined as the possibility or probability of an adverse impact on an organism, system, or sub-population arising from exposure to an agent under certain conditions. Health risk analysis is a process of estimating the magnitude of a health problem and its consequences at a certain time with the aim of predicting the occurrence of health problems caused by risk agent hazard exposure.[14]

This study aims to determine the level of PM10 exposure environmental health risks to traders in the Siteba Market area of Padang City and risk management that can be done. The results

of this study are not only beneficial in risk control, but can also be used as a scientific framework in making decisions and policies in overcoming health and environmental problems.

METHOD

This study uses the environmental health risk analysis (ARKL) method. ARKL aims to calculate the level of risk received by a population due to environmental exposure. This research was conducted from November 2016 to March 2017, with 45 respondents. The human sampling technique is accidental sampling with consideration of a homogeneous population and congested and congested activities in the market while PM10 concentration samples were taken using the Staplex TFIA Model series High Volume Air Samplers. Anthropometric data collection, activity patterns, and other supporting data is by interview using questionnaires.

Some procedures carried out include hazard identification and risk sources, dose response analysis, exposure analysis, and risk characterization. The risk level is stated in Risk Quotion (RQ) which is expressed as a ratio between the intake value and the reference dose (RfC). Intake is the amount of concentration inhaled per kilogram of body weight per day, while RfC is an estimate of daily exposure doses that do not cause health effects in the lifetime of exposure. A situation is declared risky and management control is needed if the RQ value is> 1.

The reference concentration value (RfC) PM10 has not been found in the Integrated Risk Information System (IRIS) or the Minimum Risk Level (MRL) table, so the reference concentration values for PM10 are sought based on National Ambient Air Quality Standard (NAAQS) for PM10 is 150 µg / m3 (arithmatic mean annual).[15] Based on safe concentration I = RfC means the safe intake of respondents is RfC, with a default value R = 0.83 m3 / hour, tE = 24 hours / day, fE = 350 days / year, Wb = 70 kg, tAvg = 365 days /year. Then the reference concentration value (RfC) PM10 is 0.014 mg / kg / day.

RESULT

The results of the highest PM10 concentration measurements were at the Kodam Intersection of 230 µm / Nm3, the lowest concentration at the Market Rear was 77 µm / Nm3, and the average concentration at the three sampling points was 150 µm / Nm3. The PM10 concentration at the Simpang Kodam has passed the quality standard or threshold value based on the Republic of Indonesia Government Regulation Number 41 of 1999 concerning Environmental Pollution Control with a PM10 concentration value of 230 µm / Nm3. In this regulation the quality standard PM10 is 150 µg / Nm3. Whereas PM10 concentrations on Perumnas intersection of 143 µm / Nm3 and Rear Market of 77 µm / Nm3 are still below the quality standard.

The average age of respondents is 38.36 years and the highest age is 60 years. The average body weight (wb) of the respondent is 61.11 kg with the highest body weight is 82 kg. The average duration of daily exposure received by respondents during trading is 10.73 hours / day, the respondent exposure frequency (fE) in one year of exposure is 334 days / year, besides the duration of exposure (Dt) of the average respondent during trading is 11 , 6 years, the longest duration of exposure is 55 years and the shortest exposure is 1 year. Since the rate of inhalation for Indonesians does not yet exist, for the calculation of intakes used based on US-EPA, the value of the inhalation rate by default for adults is 20 m3 / day or 0.83 m3 / hour.[16]

The highest lifetime intake was 0.0306 mg / kg / day located at Simpang Kodam with the lowest lifetime intake of 0.0102 mg / kg / day located at the Back of the Market, while the highest

realtime intake was 0.0118 mg / kg / day which is also located at Simpang Kodam with the lowest realtime intake of 0.0039 mg / kg / day located behind the Market.

PM10 lifetime RQ values at two sampling points and with average concentrations at three points have RQ> 1, which means that exposure is not safe for traders so control needs to be taken, while one sampling point located behind the Market has RQ < 1.

The realtime exposure Quotient (RQ) value for traders in the Siteba Market at all sampling points and based on the intake has an average RQ <1, which means that exposure is still safe or not risky to traders.

DISCUSSION

The PM10 concentration at the Kodam intersection of 230 μm / Nm3 has passed the quality standard or threshold value based on the Republic of Indonesia Government Regulation Number 41 of 1999 concerning Environmental Pollution Control with a concentration value of PM10 (150 μg / Nm3). While PM10 concentration at Simpang Perumnas was 143 μm / Nm3, Behind Market of 77 μm / Nm3 was still below the quality standard and the average concentration of PM10 in the three sampling locations was the same as the quality standard of 150 μg / Nm3.

Based on Suhananto's research on PM10 concentration measurements carried out along Bogor Highway, Depok City had one measurement location that passed the quality standard when compared with the Republic of Indonesia Government Regulation Number 41 of 1999 concerning Environmental Pollution Control with PM10 concentration of 159 μg / Nm3, p. this is because the industry is around the measurement point, close to the congestion point, and without vegetation cover.[17] Overall the difference in PM10 concentrations in non-vegetated areas has a high average concentration compared to vegetated areas.[4,17]

The number of vehicles passing, the point of congestion, and the activities of raising and lowering passengers from city transportation in the Pasar Raya-Siteba route became the cause of the high concentration of PM10 at the location of the sampling point, namely the Kodam Junction. This is in line with Zhang's research conducted in Beijing that overall, vehicle exhaust, coal combustion and dust from transportation activities are the main sources of PM10.[18] PM10 concentrations are higher in industrial estates than in the domestic region.[19,20]

In addition, the presence of plants and trees has an influence on the low or high concentration of PM10 in ambient air. Along the Simpang Kodam road, there are no trees that can absorb pollution. At the Perumnas intersection the number of vehicles passing is not as many as vehicles passing at the Kodam intersection while in the back of the market there are several trees that can absorb pollution or dust in ambient air.

Based on the formula of intake (intake) weight is inversely proportional to the amount of intake. If other factors are considered constant, it can be concluded, the greater a person's weight, the smaller the intake value he receives, and vice versa, the smaller the weight, the greater the value of intake received. In addition, according to the 2012 Directorate General of Disease Control and Environmental Health (DG P2PL), the default value for the frequency of exposure is 350 days / year, the duration of exposure (Dt) is 30 years, and the weight (wb) is 55kg.

The results of anthropometric measurements and activity patterns on traders in the Siteba Market include the average age of respondents, which is 38.36 years, the average body weight (wb) of respondents is 61.11 kg, average daily exposure (tE) respondents received during trading, namely 10.73 hours / day, the exposure frequency of respondents (fE) in one year of exposure was

334 days / year, and the duration of exposure (Dt) of the average respondent during trading was 11.6 years.

In this study, the majority of respondents were male by 55.6%. The highest level of education in respondents is graduating from high school by 53.3% or as many as 24 people from 45 respondents. The low level of education of these respondents will affect the low level of knowledge about the dangers of air pollution and self-protection from polluted air so that respondents with low education will be more at risk of getting health problems especially respiratory problems due to exposure to ambient air pollution.

Based on the results of research on the description of respiratory disorders, it can be described the symptoms of the dominant respiratory disorder experienced by respondents during trading in the Siteba Market area are shortness of breath, chest pain, and cough of 73.3% is a potential symptom if exposed to PM10 for a long period of time. Based on this description, respondents had felt the health effects of exposure to PM10 which could increase the risk of respiratory disease in traders in the Siteba Market area.

The above conditions are coupled with the conditions of traders which require to remain in the location continuously. Whereas according to the WHO, the effects of PM10 exposure health in a short time can affect the reaction of pneumonia, ARI / symptoms in the respiratory tract, increase the effects on the cardiovascular system, increase emergency care, increase drug use and increase mortality. While the long-term health effects show an increase in symptoms in the lower respiratory tract, exacerbations of asthma, decreased lung function in children, increased obstructive chronic lung, decreased average life expectancy, especially cardiopulmonary deaths and the probability of lung cancer incidence so , it can be said that particulates are predictors of mortality and morbidity in the community.

Based on the calculation of the formula, the reference concentration value (RfC) of PM10 exposure was 0.014 mg / kg / day. This RfC value is the same as the value used in the Suryaman and Wulandari studies.[8,21] In contrast to the values used in the Nukman study with RfC PM10 0.03mg / kg / day derived from epidemiological studies in Taiwan and different from Suhananto's research, the RfC PM10 value was 0.0018mg / kg / day which was derived from primary standards (standard primary) NAAQS for 24 hour episodes.[17,22]

Exposure analysis is carried out based on two categories, namely realtime exposure intakes and lifetime or lifespan exposure intakes. The greater the PM10 concentration value, the greater the intake received by the respondent. The variables used in calculating this intake consisted of concentration (C) PM10 and included values of anthropometric characteristics and activity patterns consisting of intake rate (R), exposure time (tE), exposure frequency (fE), duration of exposure (Dt) , weight (Wb), and average period (tavg).

Based on the results of the exposure analysis consisting of lifetime exposure intake and realtime exposure intakes, lifetime lifetime exposure values at Simpang Kodam were 0.0306 mg / kg / day, Perumnas intersection of 0.0190 mg / kg / day, Market Rear of 0, 0102 mg / kg / day, and the average intake is 0.0200 mg / kg / day. While the realtime exposure intake at Simpang Kodam was 0.0118 mg / kg / day, Simpang Perumnas was 0.0073 mg / kg / day, Rear Market was 0.0039 mg / kg / day, and intakes were 0.0077 mg / kg / day. The difference in intake values at each sampling location was influenced by differences in PM10 concentration.

Higher intake or intake values can make these locations more risky than other locations. The longer the duration of daily exposure, the annual frequency of exposure, and the time of respondents exposed to risk agents, the greater the intake of the person and the more risk of health

problems due to exposure to the risk agent. In addition, the value of intake or intake is inversely proportional to body weight. The greater the weight, the smaller the intake (intake) received by the respondent or vice versa.

The value of respondent's risk based on lifetime and realtime received intake (RQ) which was assessed in this study with PM10 RfC value that is equal to 0.014 mg / kg / day. The lifetime risk calculation results obtained from the comparison between the intake and the RfC value produce 2 risk areas (RQ> 1), namely the Kodam Intersection and Perumnas Intersection and for RQ with the average intake also produce RQ> 1 which means that exposure is not safe for traders control is carried out, while one sampling point located behind the Market has RQ <1.

The results of realtime risk calculations obtained from the comparison between the intake and RfC values by using the actual exposure duration obtained RQ values <1 in all sampling locations, meaning that exposure is still safe or not risky to traders.

Based on the calculation results, the concentration (C daily average) of PM10 is safe or allowed to be exposed to traders in the Siteba Market area of 0.104 mg / m3 or 104 μg / Nm3 for lifetime exposure, while the concentration value obtained from the calculation results the maximum concentration is 0.230 mg / m3 or 230 μm / Nm3 with an average concentration in all three sampling points namely 0.150 mg / m3 or 150 μm / Nm3.

Based on the results of measurements, the safe exposure time (tE) for traders is 4.8 hours / day at maximum concentration, while the exposure time (tE) obtained from the calculation results is 10.73 hours / day. In addition, the safe frequency of exposure (fE) for traders in one year of exposure is 152 days / year, while the exposure frequency (fE) obtained from the calculation is 334 days / year.

The decrease in PM10 exposure concentration due to transportation is by limiting the age of motorized vehicles and the use of gas fuel. This is in line with Zhang's research and also Laumbach's research stating vehicle emissions control will be a possible strategy to reduce PM10 pollution.[18,23] In addition, reducing PM10 concentration can be done by planting trees or by utilizing vegetation along the Siteba Highway. Whereas to reduce exposure time and exposure frequency it is not possible to apply to traders because traders do not have rules of working hours or rules of daily trading hours and remember social and economic factors, so that control can be done is the use of personal protective equipment (PPE) in the form of masks, but the use of this mask is very dependent on the awareness of each individual.

Risk communication is a follow-up of this ARKL research. The parties responsible for reducing the impact of PM10 exposure in the Siteba Market area. For the relevant government in order to be able to make adequate parking facilities, besides that traffic regulation for public vehicles such as city transportation and bentor is very necessary to unravel congestion for the comfort and safety of other motorists. In addition, the UPTD of the Nanggalo Market or Siteba Market in order to convey information and socialize the health impact of PM10's exposure. So, traders can be aware of PM10 exposure such as by reducing trading time per day. To reduce the risks and impacts that will occur it is necessary to collaborate between the government and the population at risk so that risk management can be carried out properly.

CONCLUSSION

The results of the calculation of lifetime risk levels generated 2 locations at risk of exposure to PM10 (RQ> 1), namely the Kodam Intersection and Perumnas Intersection and for RQ with intakes also produced RQ> 1 which means PM10 exposure is not safe for traders in Siteba Market,

Padang. calculation of realtime risk level RQ value <1 at all sampling locations which means that exposure is still safe for traders. Risk management that can be done is to reduce PM10 concentration values through limiting the age of motorized vehicles, using fuel gas, and planting trees or using vegetation in along Jalan Siteba.

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