

OCCUPATIONAL HEALTH AND WELLNESS

50

“Mining presents various hazards that can be of significant consequences, but through effective risk management strategies, neither safety incidents nor the onset of occupational diseases are inevitable.”



Our values are at the core of our commitment to integrated wellness management. Occupational hygiene surveillance provides important leading indicators regarding exposure to hazards in the workplace, such as noise, particulate matter and fumes. Occupational health and wellness monitoring and management constitute integrated wellness management.

The Department of Health (DoH) has identified mine workers and peri-mining communities as key populations for certain diseases, including pulmonary tuberculosis (PTB), HIV and sexually transmitted infections (STIs). Our approach to employee wellness integrates these government initiatives to reduce and prevent these and other primary health challenges, and includes community awareness and outreach initiatives to address PTB, HIV & Aids and other chronic conditions among employees and in communities.

Employee wellness is identified as a top 10 risk in the Group Risk Register in recognition of the impact that various diseases and health risks can have on the quality of life, safety performance and productivity of the workforce.

Reporting context

REPORTING FRAMEWORKS

ICMM



UN SDGs:



PRINCIPAL LEGISLATION

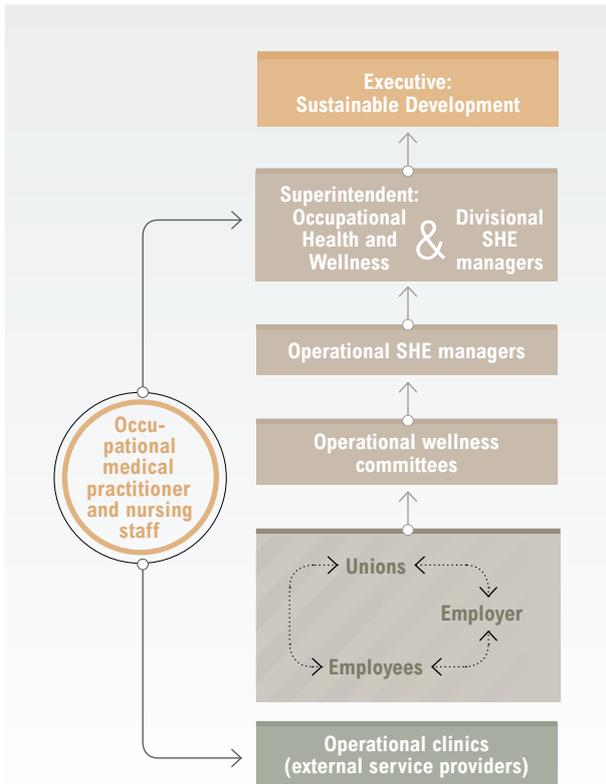
- » The Mine Health and Safety Act (MHSA)
- » The Occupational Health and Safety Act (OHSA)
- » The Mining Charter
- » The Occupational Diseases in Mines and Works Act
- » The Compensation for Occupational Injuries and Diseases Act

How we manage occupational health and wellness

Occupational hygiene surveillance is combined with comprehensive risk-based occupational medical surveillance programmes that identify and monitor for the health risks relevant to each workplace and occupation. These programmes are managed at the operations as part of the SHEQ management system and align with SANS 16001 (the South African National Standard on disease and wellness management). The three mines in the ARM Ferrous division are SANS 16001 certified.

All operations except for Machadodorp Works are certified in terms of either OHSAS 18001 or ISO 45001, the international Standards on occupational health and safety management systems. Black Rock, Beeshoek and Khumani mines are certified in terms of ISO 45001 while Nkomati and Two Rivers mines are in the process of converting from OHSAS 18001 to ISO 45001 certification. Modikwa Mine and Cato Ridge Works remain OHSAS 18001 certified. Machadodorp Works was OHSAS 18001 certified and while not formally undergoing re-certification in F2019, remains aligned with the standard.





Occupational health and wellness services are delivered at site clinics at the mining operations. Contractors are treated as employees and are screened at the start of, during and at completion of contracts. Induction training includes occupational health and hygiene training, and Wellness Officers and Peer Educators provide ongoing training and awareness.

Operational Wellness Committees at operations include representatives from the employer, employees and organised labour. These Committees meet regularly to promote engagement in a partnership approach to managing wellness.

Our approach to occupational health and wellness aligns with the requirements of the DoH, Department of Employment and Labour (DoL), Department of Mineral Resources and Energy (DMRE), and the Mine Health and Safety Council (MHSC).

Occupational hygiene, health and wellness practices and processes are assessed and assured at a number of levels on an ongoing basis. These include:

- » Quarterly reviews by an external occupational health expert.
- » Annual audit by an external certified wellness auditor of the performance of operations against the ARM Group's Health and Wellness Standard. The Standard is based on the requirements of relevant legislation, reporting frameworks, industry good practice and the SANS 16001:2013 Wellness and Disease Management Standard. The audit identifies areas for improvement at operations, measures year-on-year progress and benchmarks performance between operations. In F2019, the average score across the operations was 86.5%, in line with the F2018 score and above our current target of 81%.

- » Annual internal audits of operating procedures and practices by an independent occupational health nurse and doctor monitor compliance and identify areas for improvement.
- » External Safety, Health and Environmental (SHE) audits facilitated every second year by the ARM Corporate Office (performed in F2019).
- » Annual external audits related to certification in terms of OHSAS 18001 and ISO 45001.
- » SANS 16001 certification audits at the mines in the ARM Ferrous division.
- » Annual external assurance of sustainability data.

Occupational health and wellness

ARM takes a precautionary approach that aims as far as possible to limit at-source workplace exposure to hazards, which include noise, particulate matter, fumes and hazardous substances. Exposure is managed through a combination of:

- » control at source
- » identification of potential hazards;
- » occupational hygiene and personal monitoring;
- » awareness campaigns;
- » personal protective equipment; and
- » formalised safe operating procedures to limit exposure.

Medical surveillance is conducted for employees and contractors before they start working in risk areas to establish baselines for the relevant metrics, such as hearing and lung capacity. Mandatory medical surveillance programmes then regularly monitor these indicators to assess and follow up on shifts from the baselines. This includes counselling, training on the use of personal protective equipment, reporting to the DMRE (at the threshold required) and, if occupational exposure is suspected, referral for specialist examination to confirm this.

Noise-induced hearing loss (NIHL) remains a material health risk in the mining industry and at the operations. While occupational respiratory diseases have been reported at our operations, baseline indicators from pre-employment occupational medical surveillance show that these relate to exposure that arose before commencing employment with ARM. Our clinics facilitate the compensation submissions regardless of the origin of diseases.

ARM INTERNAL HEALTH AND WELLNESS STANDARD

Average Group Audit Score vs Target (%)



ENSURING A SAFE, HEALTHY AND APPROPRIATELY SKILLED WORKFORCE continued



How we manage hearing conservation

Hearing conservation and NIHL¹

The occupational health and wellness programme has a strong focus on hearing conservation and aligns with the Mining Industry Occupational Safety and Health (MOSH) leading practice on noise. Specialist early warning programmes have been introduced to effectively manage NIHL. These programmes detect deformity in the sensory hair before actual hearing loss occurs. Affected employees undergo counselling and coaching about hearing protection. Deterioration from the individual's hearing baseline as at employment, referred to as the shift in percentage loss of hearing (PLH), of 5% or more is reported to the DMRE and investigated in terms of Section 11.5 of the Mine Health and Safety Act (MHSA).

Where hearing loss suggests NIHL, PLH shifts greater than 10% are referred for specialist examination. This includes diagnostic audiograms conducted by an Audiologist and Ear, Nose and Throat Specialist to establish the cause of the hearing loss. If the audiograms confirm NIHL due to workplace exposure, a claim for compensation is submitted on behalf of the employee².

Hearing conservation		
36 572 audiometric tests (F2018: 33 812)	2.7% of employees showed PLH shifts between 5% and 10% (F2018: 2.4%)	1.4% of employees showed PLH shifts > 10% (F2018: 1.7%)

AUDIOMETRIC TESTING

- » Performed prior to employment and when transferring between work environments to establish baselines.
- » Regular periodic hearing tests identify PLH shifts from the hearing baseline.

WORKPLACE HEARING CONSERVATION INITIATIVES

- » Reducing equipment noise emissions to below the DMRE threshold (107 dB(A)).
- » A buy-quiet policy for new equipment.
- » Training employees in the use of hearing protection devices (HPDs).
- » Personalised HPDs at some operations (Modikwa and Nkomati mines).
- » Hearing safety awareness campaigns in high noise areas.

IF HEARING DETERIORATES

- » Counselling is provided.
- » Clinic personnel provide training.
- » Appropriateness and effectiveness of hearing protection devices is re-confirmed.
- » Exposure to noise both at and outside the workplace is monitored.
- » The employee is redeployed to work in areas with low noise levels where possible.

¹ More information on current and historic NIHL at an operational level can be found in ARM's Sustainability Data Tables, available on our website at www.arm.co.za.
² Claims for NIHL are submitted for compensation to either Rand Mutual Assurance (mine employees) or the Medical Bureau for Occupational Diseases (employees at our two smelters) in terms of the Occupational Diseases in Mines and Works Act.

Dust and hazardous substances

Hazardous substances include

DUST PARTICULATES

Respiratory complications can arise from long-term exposure to high levels of dust. Complications can include pneumoconiosis and increased pulmonary tuberculosis (PTB) infection rates. Silica content in the orebodies of our base metals and platinum mines are monitored routinely as part of occupational hygiene monitoring programmes and silica levels are consistently below analytical detection limits. There is therefore minimal risk of exposure to silica at our operations. Six cases of silicosis were reported during F2019 (F2018: 53), all of which arose from exposure to silica before commencing work at ARM operations.

Dust suppression nevertheless remains a core occupational hygiene focus and airborne dust levels are controlled using water sprays and surfactants. Employees at source are supplied with dust masks where appropriate and extractor fans minimise exposure to dust in the workplace where relevant.

Information regarding the silicosis settlement agreement is available on page 33 of ARM's 2019 Integrated Annual Report.

ASBESTOS

Asbestos fibres are present in the ore body at Nkomati Mine but not at any of the other mines in the Group. The mine has implemented extensive dust suppression and exposure mitigation measures. A comprehensive surveillance and control programme was implemented in consultation with leading experts from the Institute of Medicine (IOM) in Scotland.

Three cases of asbestosis were diagnosed at Modikwa Mine and reported to the Medical Bureau for Occupational Diseases (MBOD) in F2019 and eight in F2018. Investigation into these cases confirmed that they relate to exposure to asbestos during prior employment. Compensation claims are nevertheless facilitated by the Modikwa site clinic.

MANGANESE

Cato Ridge Works processes manganese ore and has a medical surveillance and biological monitoring protocol developed by leading occupational health specialists. The manganese protocol has been implemented at Black Rock Mine as well as for employees who handle manganese ore at the Saldanha and Port Elizabeth port terminals.

ARSENIC

Elevated levels of arsenic were reported in concentrate at Nkomati Mine in 2018, which subsequently returned to normal levels. Sampling of the concentrate showed that the arsenic does not become an airborne pollutant and does not pose a health risk to employees.

OTHER

- » Chromium
- » Coal, tar, pitch and volatiles (CTPV) at Cato Ridge Works

2019

Continued focus on reaching the 2014 Occupational Health and Safety Milestones, which include elimination of occupational lung diseases and noise-induced hearing loss.

The table below shows ARM's progress against the ten-year goals set by the Mine Health and Safety Council (MHSC) Occupational Health Milestones in 2014.

Mine Health and Safety Council (MHSC) Occupational Health Milestones

ELIMINATE OCCUPATIONAL LUNG DISEASE (NO NEW CASES OF SILICOSIS)

No new silicosis infections have been diagnosed arising from exposure at ARM-managed mining operations since 2009. Where silicosis is diagnosed that arises from prior exposure, the cases are submitted for compensation but not included in the Milestone statistics.

ELIMINATE NOISE-INDUCED HEARING LOSS (NO HEARING SHIFTS >25 DB FROM HEARING BASELINE)

The audiometric testing equipment at the operations' clinics was upgraded to monitor Standard Threshold Shifts (STS) and specialised early warning programmes have been introduced to effectively manage NIHL. Affected employees receive counselling and coaching about hearing protection.

PREVENTION OF HIV & AIDS AND PTB (PTB INCIDENCE TO BE BELOW NATIONAL LEVEL, CURRENTLY 567/100 000)

PTB incidence at ARM operations is 320 per 100 000 employees. This is significantly below the national rate and the industry rate for 2018 of 435.

During F2019, ergonomic and vibration surveys were conducted on trackless mobile machines and other equipment at Nkomati and Beeshoek mines. The assessments were conducted by external service providers to determine the health impact ergonomics and vibration could have on operators. The surveys identified a number of risks and associated controls which are being implemented specifically related to operator wellness.

ENSURING A SAFE, HEALTHY AND APPROPRIATELY SKILLED WORKFORCE continued

54

Primary health

ARM's Integrated Wellness Management Standard includes comprehensive programmes to manage PTB, HIV & Aids, STIs and chronic diseases and ensures a consistent approach across all operations in the Group.

Wellness centres at all of the mines, except for Nkomati Mine, have primary healthcare (PHC) facilities that provide treatment and counselling to employees and contractors. At Nkomati Mine, a full-time PHC nurse provides daily PHC services at the mine clinic. The wellness center at Beeshoek Mine is approved to dispense HIV & Aids, STI and PTB treatment. Contractors presenting with chronic diseases are treated in terms of memorandums of understanding with the DoH and, where appropriate, referred to public hospitals and clinics.

Trained occupational health and wellness coordinators supervise operational programmes. The wellness coordinators

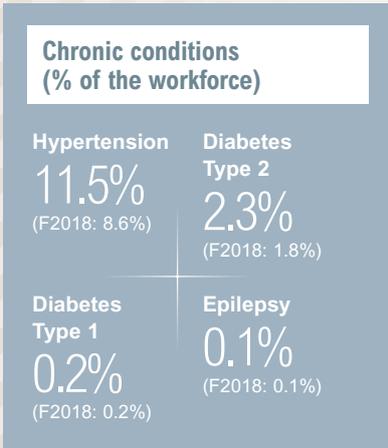
at Two Rivers, Modikwa, Khumani, Beeshoek and Black Rock mines have completed training on the implementation of SANS 16001, which includes HIV & Aids management.

Beeshoek, Black Rock and Khumani mines have Memorandums of Understanding (MOUs) in place with the Northern Cape Department of Health to strengthen the implementation of the provincial pulmonary tuberculosis (PTB), HIV & Aids, STIs and chronic diseases strategies. The partnerships build capacity of local clinic staff and engage communities and other stakeholders to decrease the morbidity and mortality associated with these diseases. Two Rivers and Modikwa mines are in the process of finalising similar MOUs with their provincial Departments of Health.

ARM's mining operations report monthly to the DMRE regarding screening, diagnosis and treatment, as well as compliance with the DMRE Guidelines for PTB, HIV & Aids Management.

Chronic conditions

2019 Continued risk-based monitoring and treatment of chronic conditions.



Chronic diseases are monitored as part of the integrated health risk and wellness management programmes at the operations and tracked in chronic disease registers. Chronic conditions are monitored by specific occupational risk exposure profiles with specific reference to high risk occupations.

Systems have been implemented to notify supervisors of due dates for employees' scheduled medical examinations to ensure that medical examinations are valid and up to date. Operational access control systems restrict entry to the workplace in cases of expired certificates of fitness.

The incidence of hypertension at ARM operations increased by 28% in F2019 from 1 852 to 2 363 cases, with the highest prevalence rates evident at Beeshoek, Nkomati and Two Rivers mines. Hypertension is primarily a lifestyle disease and operations have implemented programmes to raise awareness about hypertension. The clinics monitor employees with hypertension and manage compliance with prescribed treatment regimes.

During F2019, all mines formalised systems for the monitoring of chronic conditions per occupational risk exposure profile. Workplace blood pressure screening and

surveillance have increased, body mass index is included in the medical surveillance programmes and occupational medical practitioners monitor and report blood pressure statistics every quarter. Dieticians have been appointed to the clinic teams in the Northern Cape mines and the ARM Platinum operations use contracted dieticians as part of the Employee Assistance Programmes. Education regarding lifestyle diseases is included in the compulsory occupational health surveillance programme for employees in addition to the wellness awareness aspect of the induction program. Clinics also engage other stakeholders such as the Department of Health and community NGOs in conducting wellness campaigns both in the workplace and the community.

12 194 cases of upper respiratory tract infections (URTI) were diagnosed and treated during F2019, which includes repeat cases (F2018: 12 721). URITs are diagnosed based on a medical screening questionnaire rather than on a full diagnostic process and are more frequent during the cold winter months.

PTB, HIV & Aids

ARM's occupational health and wellness program integrates management of PTB, HIV & Aids and sexually transmitted infections (STIs), and prioritises their early identification.

2019

Alignment with and implementation of the National Strategic Plan (NSP 2017 – 2022) to ensure reduction and prevention of PTB, HIV & Aids infections and STIs; offer all employees counselling and voluntary testing (CVT); and link all eligible employees to an anti-retroviral (ART) treatment programme.

2019

Continue passive PTB screening and offering HIV counselling and voluntary testing to all employees visiting our clinics.

ARM's approach to managing PTB, HIV & Aids and STIs aligns with the DoH's National Strategic Plan 2017 – 2022 (NSP) and the requirements of the Mining Charter. The NSP is South Africa's master plan for preventing and treating PTB, HIV & Aids and STIs, and focuses on reducing new infections, facilitating treatment and ensuring the cure of PTB and the suppression of HIV viral loads.

HIV & Aids

The HIV & Aids Policy emphasises the right of all employees to confidentiality and non-discrimination on the basis of HIV status. Employees are encouraged to know their status and to take responsibility for managing their wellness. HIV counselling and voluntary testing (CVT) is offered at initial, periodical and exit medicals, and upon request of employees.

Permanent employees belong to medical aid schemes that provide disease management programme (DMP) benefits, including HIV & Aids treatment. Peer Educators are trained and provide formal feedback on their activities. PTB, HIV & Aids and STI awareness and education is part of induction training and wellness days, including World Aids Day on 1 December. This year, several operations participated in the Cheka Impilo campaign launched on World Health day. Cheka Impilo is an accelerated national wellness campaign that focusses on testing and treating people with HIV, PTB, STIs and non-communicable diseases such as hypertension and diabetes.

Indicative HIV prevalence rates from the operational clinics indicate that estimated prevalence rates at our operations are below the district and provincial prevalence. The average estimated HIV prevalence for the Group is 7.8% (F2018: 7.7%).

HIV & Aids management

34 246
counselling
sessions*
(+16%)
(F2018: 29 498)

11 617
employees*
tested (+4%)
(F2018: 11 145)

4 767
employees*
on ART
(-25%)
(F2018: 6 379)

34 246 HIV & Aids counselling sessions were delivered during F2019 and 12 765 employees and contractors were tested. The number of employees and contractors receiving ART at our operations decreased by 25% in F2019 due to reporting issues at the occupational health service provider at Modikwa Mine as well as turnover of short-term contractors out of ARM operations, and their consequent movement off ARM DMPs. ARM Ferrous has fully implemented the new test and treat policy and all patients receiving ART in the division have been enrolled on DMPs. The policy is still in the process of being implemented in ARM Platinum through the MoU with the DoH.

	F2019			F2018		
	ARM Ferrous	ARM Platinum	ARM total	ARM Ferrous	ARM Platinum	ARM total
Employees and contractors						
Counselled*	18 078	16 168	34 246	11 199	18 299	29 498
Tested	5 802	6 963	12 765	3 438	7 707	11 145
Enrolled in disease management programmes	1 715	2 049	3 764	1 172	2 207	3 379
Receiving anti-retroviral treatment (ART)	1 715	3 052	4 767	1 172	5 207	6 379

* CVT is offered at every visit to the PHC facilities, including at induction and during regular follow-up visits for chronic disease management. The number of people counselling sessions therefore exceeds the total number of employees.

ENSURING A SAFE, HEALTHY AND APPROPRIATELY SKILLED WORKFORCE continued

56

Pulmonary tuberculosis (PTB)

Passive PTB screening is conducted using the DoH cough questionnaire at all visits to our occupational health clinics. All new PTB cases are reported to the DMRE and submitted to the Medical Bureau for Occupational Disease (MBOD) for possible compensation. Contact tracing at the workplace is conducted for all new PTB cases to manage infection control and site clinics notify the community clinic in the area where the employee resides to arrange for contact tracing at home.

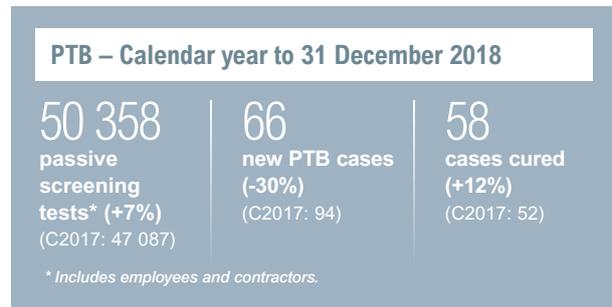
ARM participates in the Masoyise health programme, a multi-stakeholder initiative led by the Minerals Council South Africa aimed at addressing the challenge to eliminate PTB, HIV and non-communicable diseases in the mining industry. The project committed to offer HIV counselling and testing (HCT) and PTB screening to all employees in the mining sector over three years from 2016 to 2018. All ARM mining operations submit quarterly Masoyise reports to the Minerals Council using the online Healthsource reporting system.

Employees with PTB are monitored according to the national PTB management protocol. In alignment with the MOUs with the DoH, last year all mines except Two Rivers Mine introduced Isoniazid Preventative Therapy (IPT), which is provided for a period of six months, particularly to support patients with HIV or other lung diseases such as pneumoconiosis.

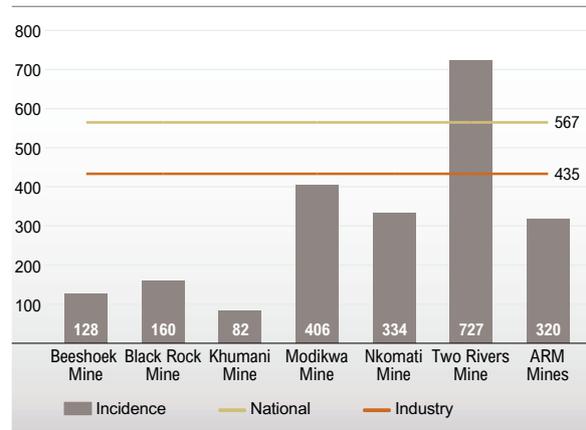
PTB incidence is below national and industry rates at all ARM mines except Two Rivers Mine, which is currently negotiating an MOU with the Limpopo DoH that will enable the operation to implement IPT to reduce PTB rates.

Note: The Department of Health monitors PTB statistics on a calendar-year basis. The PTB statistics in this section align with this approach and report statistics for the 12 months ending 31 December 2018 (C2018).

There were 50 358 PTB screening tests conducted on employees and contractors and 66 new cases detected in the 12 months to 31 December 2018. The cure rate improved to 87.9% in C2018, slightly below the DoH's 2014/2015 target of 90%, but a significant improvement on the 55.3% reported in



PTB INCIDENCE PER 100 000 WORKERS



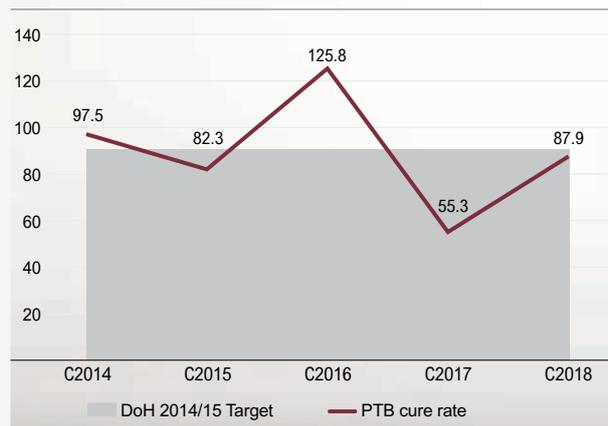
C2017. However, the C2017 cure rate was negatively affected by an increase in silicosis among contractors exposed to silica in prior employment before joining ARM (which increased the PTB infection rate), as well as infected short-term contractors on treatment who moved out of our operations (reducing the cure rate). Five cases of multi-drug resistant (MDR) PTB were detected at ARM operations during the year (C2017: nine). The patients were admitted to special MDR hospitals for further management as required by the DoH. Each case was investigated in terms of Section 11(5) of the Mine Health and Safety Act, the results were submitted to the DMRE and the progress of the patients is monitored at site clinics during treatment.

2019

Reinforce our PTB-related community outreach projects to focus on early detection and treatment of PTB for communities around our operations.

ARM facilitates and supports various community outreach initiatives that address PTB, HIV & Aids, as well as community awareness and testing campaigns. Where possible, ARM operations engage with local Aids councils to ensure community projects address the most pressing wellness and health needs. Initiatives supported include community wellness centres and home-based care groups.

PTB CURE RATE (%)



	January to December 2018			January to December 2017		
	ARM Ferrous	ARM Platinum	ARM total	ARM Ferrous	ARM Platinum	ARM total
Employees and contractors:						
Screened**	33 587	16 771	50 358	29 650	17 437	47 087
New cases	13	53	66	17	77	94
Cured	8	50	58	10	42	52
MDR/XDR*	1	4	5	0	9	9

* Multi-drug resistant/Extensively drug resistant TB.

** All visits to the PHC facilities include passive TB screening, including induction and regular follow-up visits for chronic disease management. The number of screenings is therefore higher than the total number of employees.

2019 Continue progress towards achieving the DoH Strategic Plan in terms of the 90-90-90 goals for PTB, HIV & Aids.

The DoH introduced the 90-90-90 principle relating to PTB, HIV & Aids counselling and testing in 2017. This refers to Goal Three of the NSP, which requires that operations achieve 90% compliance with the following elements by 2022:

HIV & Aids

90% of employees living with HIV must know their status.

90% of employees who are HIV positive must be on ART.

90% of employees on ART must achieve viral suppression.

PTB

90% of employees must be screened for PTB.

90% of those diagnosed with PTB must be on treatment.

90% of those on PTB treatment must be cured successfully.

ARM has achieved 100% for the three PTB-related goals and is at or above the goal for the second and third HIV & Aids goals. However the percentage of employees living with HIV that know their status declined from 82% in 2018 to 69% in 2019. This is an industry-wide challenge and the Masoyise data shows the industry testing rate at 61% in 2018. ARM mining operations are implementing a significant HIV testing programme to improve this indicator. The programme includes all stakeholders, including unions, NGOs and the local Departments of Health.

FOCUS FOR F2020

- » Continued focus on reaching the 2014 occupational health and safety Milestones, which include elimination of occupational lung diseases and noise-induced hearing loss.
- » Continued risk-based monitoring and treatment of chronic conditions, particularly hypertension.
- » Alignment with and implementation of the National Strategic Plan (NSP 2017 – 2022) to ensure reduction and prevention of PTB, HIV & Aids infections and STIs; offer all employees counselling and voluntary testing (CVT); and link all eligible employees to an anti-retroviral (ART) treatment programme.
- » Continue passive PTB screening and offering HIV counselling and voluntary testing to all employees visiting our clinics.
- » Reinforce our PTB-related community outreach projects to focus on early detection and treatment of PTB for communities around our operations.
- » Continue progress towards achieving the DoH Strategic Plan in terms of the 90-90-90 goals for PTB, HIV & Aids.